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**info**



**MINIX v1.5**

**PAGESTREAM 2.0**

**POWER PC BOARD**

**ANIMATION STUDIO**

**MEGA-MIDGET RACER**

**AUDIO MASTER & E-Z FM**



## **VIDEO TOASTER**

part II:

- > Frame Buffer
- > DVE Generator



**#37**

MAR. 1991

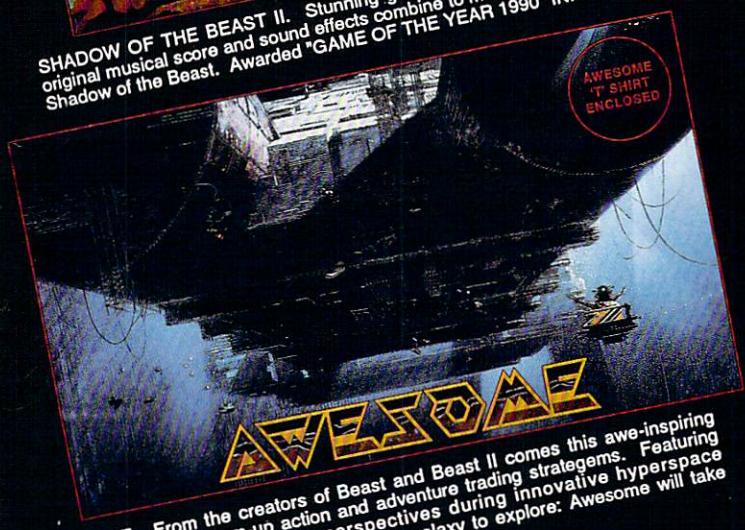
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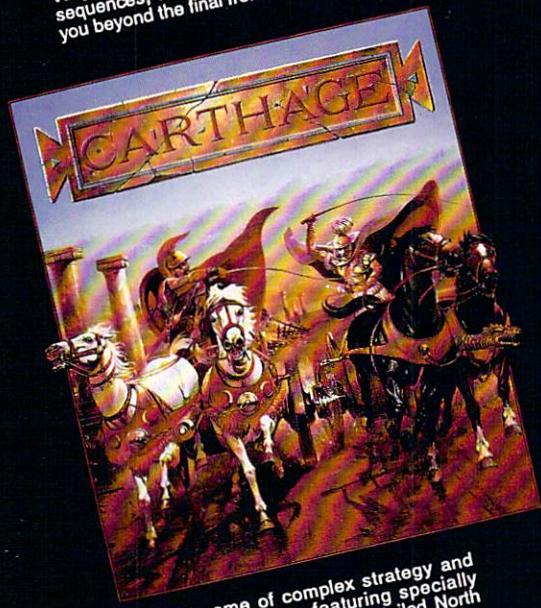
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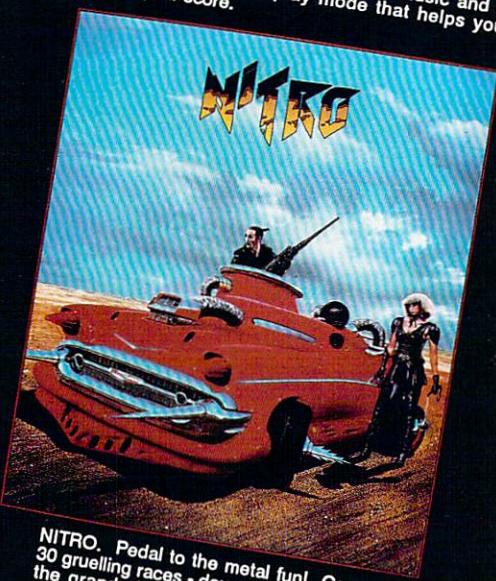


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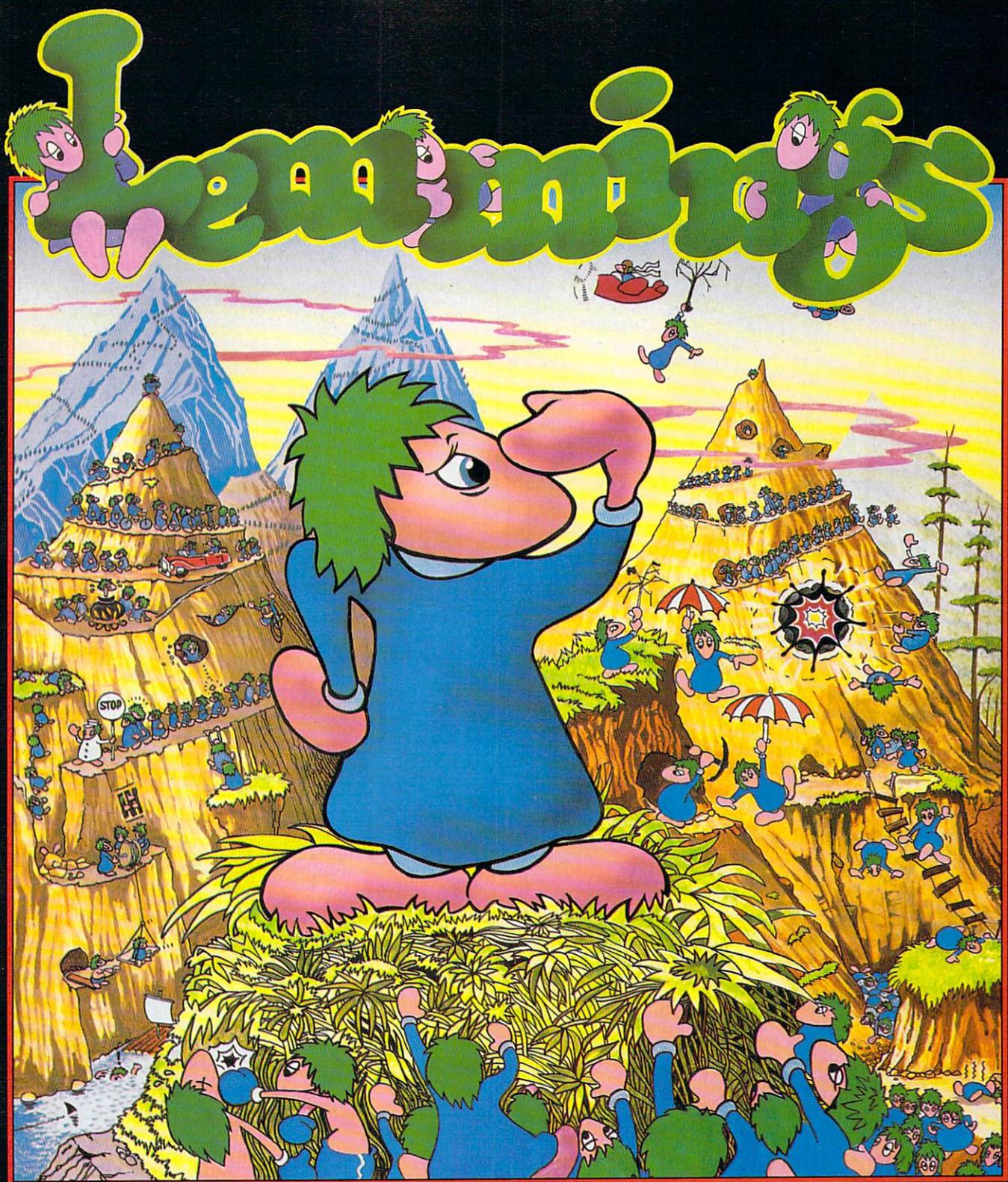
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.info strives to be a clear voice for Amiga users and a showcase for the talented people and exceptional products of the Amiga computer community. Everything in this magazine (except for some of the ads) is digitally created, edited, and color separated as complete pages on Amigas running off-the-shelf software and peripherals, and output directly to film.

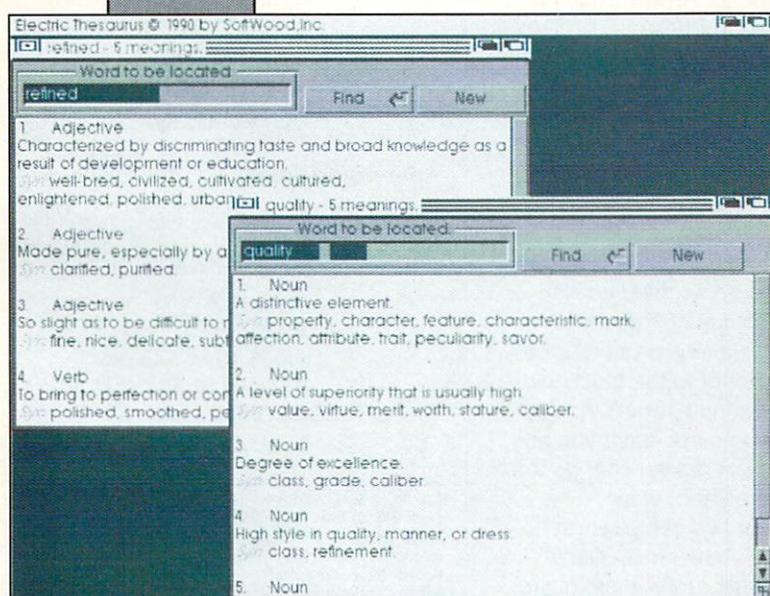
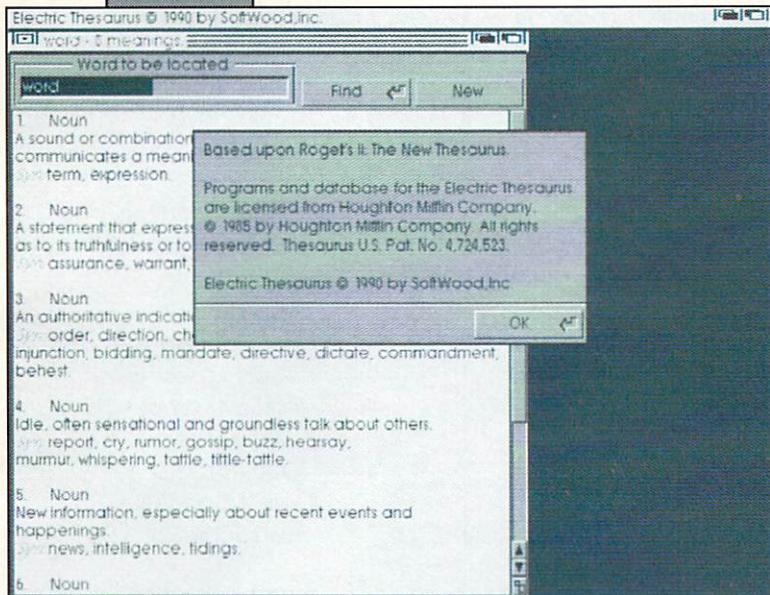
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## .info Monitor

Mark R. Brown  
Managing Editor

Benn Dunnington  
Publisher

### COMMODORE'S REVOLVING DOOR

Well, the revolving door in Commodore's executive suite has turned once again, ejecting Harry Copperman and admitting James Dionne. The surprise this time is that Copperman has not been banished, but kicked "sideways" into a Vice President's position with Commodore International.

It is simply a fact of life that Commodore/U.S. changes bosses nearly as often as some Third World countries swap generalissimos. I suppose as long as Commodore/U.S. continues to make a poor showing in the annual report, there will be a new General Manager every fiscal year. But this time there have been some changes that might make that a less likely event.

Though details were not available at presstime, it's apparent that some shuffling has gone on that will make the U.S. side of the sales spreadsheet look a little better. CATS (Commodore Amiga Technical Support) and Commodore's West Chester engineering department have been shuffled into a new division under the auspices - and accounting department - of Commodore International. Otherwise, these essential services have apparently been untouched. Indeed, we hear CBM engineering is still hiring. We do know that some administrative and marketing positions have been cut. We understand that CBM's Federal Systems Group is no more, though the personnel involved in that operation are still working and selling computers to the federal government, this time under the direct supervision of Commodore's Eastern Sales office.

James Dionne, the new U.S. General Manager, is the former head of Commodore Canada. Some insiders tell us he has the reputation of being Commodore's "Hatchet Man," brought in to cut unnecessary jobs and costs. This he is apparently doing.

Is that all bad? Not necessarily. It's obvious to us that the CATS and engineering expenses should probably be borne by Commodore International, anyway, since both work for the benefit of Commodore worldwide. That CBM was top-heavy in administrative, management, and marketing people is no secret: most large corporations are. And the cuts will certainly not mean any big cutbacks in Commodore advertising and marketing. You can't cut something that is practically nonexistent.

We've heard some speculation that Commodore/U.S. will fall back to marketing the Amiga as a game machine "like they do in Europe," but I don't think that's a real threat. In Europe, Commodore doesn't compete with Nintendo. It's a different market, and they know it. That's why they offer two models of the Amiga 500 here, one for gamers and one for more serious users. Commodore also sells a much higher proportion of Amiga 2000s and 3000s here than in Europe. Their VAR (Value Added Reseller) program has also been on the build, with VARs signing up to provide Amiga-based video, multimedia, and educational systems. Commodore knows the U.S. isn't a games market. They won't be shifting gears.

What we do expect to see is more cost-cutting and personnel shuffling and creative accounting, mostly to make the U.S. market's profit/loss column look a bit better to the stockholders on the next annual report. Aside from that, we'll be surprised if you see much in the way of radical change from the consumer's point of view.

Well, that's our two cents' worth. In any event, the watchword is: Don't Panic! These shifts are likely to make more of a ripple than a wave.

- Mark & Benn

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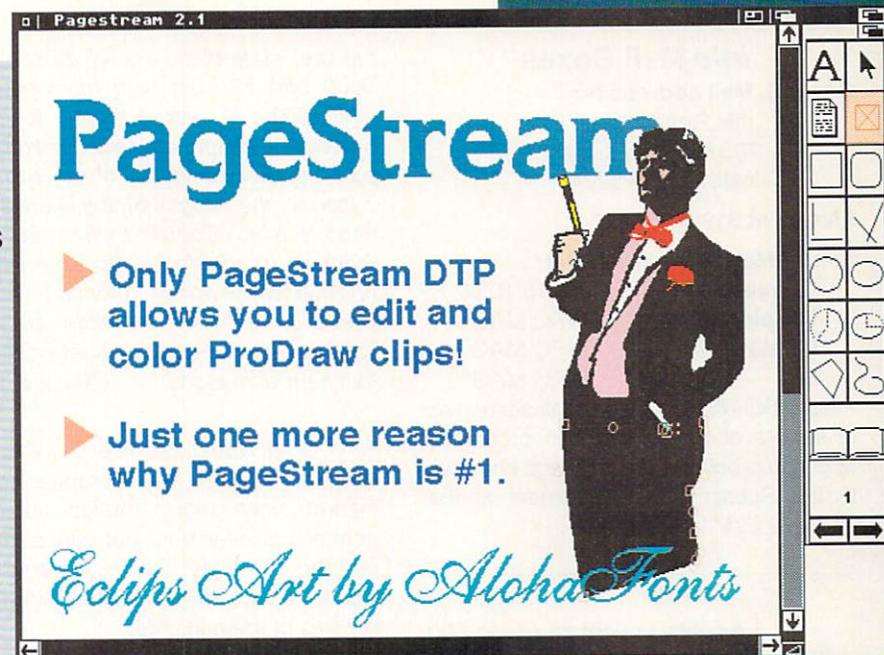
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I recently bought an Amiga 500 and spent approximately \$1100 to get a system that included one meg of memory, a color stereo monitor, *AmigaVision*, and five programs. I see that Apple is now advertising "Low Cost Macs." Whoa! Did they say "Low Cost"? The least expensive was about \$1600 for a system with one meg of RAM, a little monochrome screen, and *Hypercard*. The upper end "Low Cost" Mac with color was \$4600! Fortunately for me Commodore has a different idea of 'low cost.' I also have a question: are there versions of the APL and ADA programming languages available for the Amiga?

- Nathan Poell, St. Mary's, KS

*It's no secret that "the rest of us" that Apple marketing refers to in their ads is a pretty exclusive club. Even the Mac press is poking fun at Apple's idea of economy. MacWorld suggested ("Year in Review," January 1991) that Apple should change its slogan from "Changing the world, one person at a time" to "Changing the world, one rich person at a time." Or to "It's not just a computer, it's 52% gross margin for us." The favorite around the .info water cooler was "Apple. Buy our computer or we'll sue you too." \$4600 is a pretty loose definition of 'low cost' when you consider that \$4600 will pay for a year's tuition at a major university, including textbooks and a student parking pass. After all, a top-of-*

*the-line, state-of-the-art, 25 MHz Amiga 3000 with 50 meg hard drive goes for only \$3095. In answer to your language question, the Spencer Organization, Inc., puts out several levels of the APL language for the Amiga ranging in price from \$155 to \$495. Contact them at 201-307-9099 for more info. At this time there is no ADA for the Amiga. A forthcoming version of an ADA compiler written by Martin Tailleser has been put on hold indefinitely for financial reasons.* - Mark & Benn

**I**t would be nice if .info could keep an eye on the European game market since many foreign titles are unheard of over here but can easily be ordered through many importers. It would be nice to see some ratings and reviews of them in .info.

- Derek Godat, Terre Haute, IN

*Senior Editor Tom Malcom recently visited game development houses the length and breadth of Europe (he was even invited inside a few of them!), and plans on covering many European games in our CyberPlay section in the future. For a large dose of Euro-game information, see his European game report in issue #36.* - Mark & Benn

**I** was impressed by the cover of the November, 1990, issue and wonder if you could tell me what program you used to create the image. I also noticed that your entire magazine is created on Amigas running off-the-shelf software. Could you tell me what software and output devices you use? I think .info is a great answer to those who think Macintosh is the first and last word in desktop publishing.

- Colleen Fahey, Oaklyn, NJ

*Happy to oblige. The cover of #34 was created by Benn (as is most of .info's cover art) using a variety of graphic programs. This particular cover was modeled and rendered in Sculpt Animate 4D (Byte-by-Byte). The resulting 24-bit RGB files were pulled into the Art Department (ASDG) for preprocessing and color separation before being assembled into an*

*actual cover page using Professional Page (Gold Disk). We test and play with practically every commercial product available for the Amiga. Many quickly become indispensable in producing the magazine. It would fill up this whole page just to mention all of them. The finished pages are output as PostScript files to film on an in-house Compugraphic 9600 at 1200 dpi, our one concession to "professional-level" equipment.* - Mark & Benn

**C**ongratulations on another wonderful issue of .info! We continue to enjoy and appreciate the wealth of information that you provide to the Amiga community. In the article about Gold Disk's *Professional Draw 2.0* (November, 1990) author Brad Schenck states that he wishes it were possible to translate art that has been auto-traced by *Pro Draw*'s new auto-trace capability into 3D objects that could be animated. You can do this using *Auto-Script* (available from Computerall, 515-394-3778). It allows users to translate PostScript files that can be saved to disk, such as any *Pro Draw 2.0* drawing, and then convert them into actual *Turbo Silver* or *Sculpt* objects ready to be extruded and animated. - Mark V. Steffen, President, Computerall, New Hampton, IA

*Brad was wishing for a way of translating auto-traced objects from within Professional Draw itself, but since Pro Draw doesn't do this, Auto-Script fills the gap nicely.*

- Mark & Benn

**O**f all the monthly periodicals I get, yours is the only one that quickens my pulse rate. There is such a potpourri of articles I never know where to begin, but you can be sure I read every word, though not necessarily in succession. Signed, another .infomaniac.

- Pauline Gaylord, San Diego, CA

*It's heartening to know that two aging techno-weenies can still quicken someone's pulse rate, Pauline. Oh, you meant the articles and reviews! Well, thanks for this issue's ".info is great letter," just the same.*

- Mark & Benn

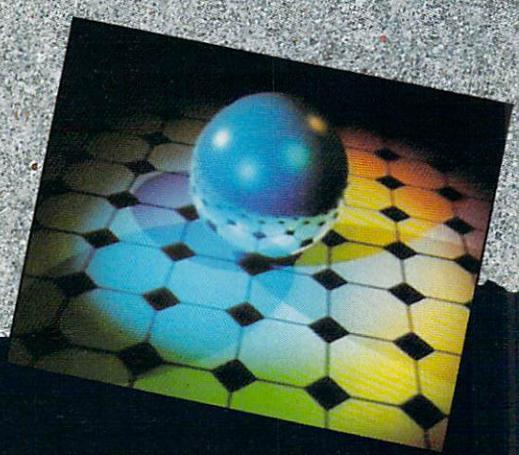
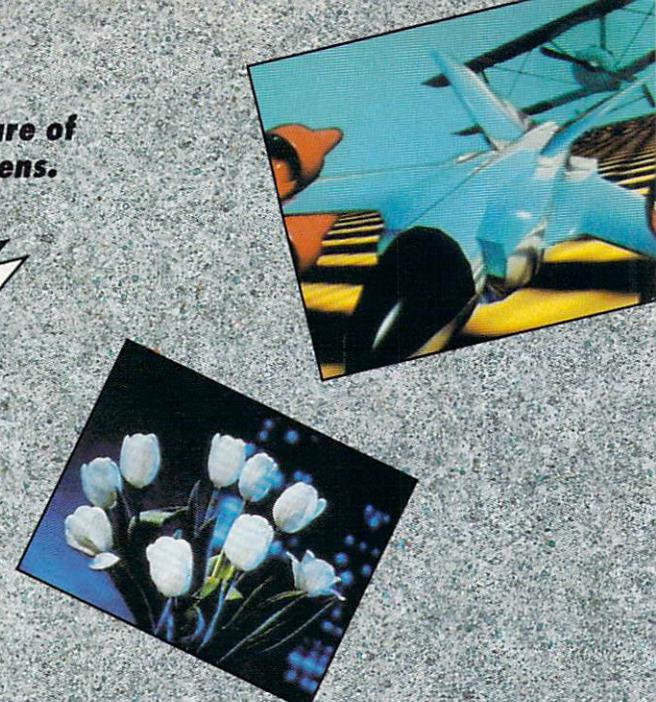




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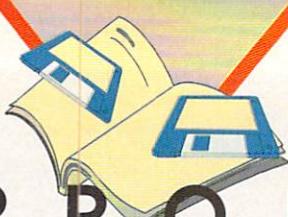
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# NEW PRODUCTS



A500 expansion courtesy of the *Bodega Bay* from California Access.



## AT THE BODEGA

Continuing their tradition of clever puns on California names (like their *Rodeo Drive*), California Access is shipping their **Bodega Bay** expansion chassis for the Amiga 500. Just so you'll know, Bodega Bay is where Alfred Hitchcock filmed *The Birds*. It's a good-sized box, about the size of an A2000 (22" wide, 23" deep, and 6.5" high), that fits over and plugs into a standard A500 and gives it slots, drive bays, and a beefier power supply. There are four slots, arranged as in the A3000, horizontally front-to-back, and allow access through the back for anything external that needs to be plugged into them. The ports will accept standard 100-pin cards and are also compatible with IBM-style cards. There are two 5.25-inch drive bays, mainly designed for mounting hard drives, but there are also optional brackets for mounting external 3.5" drives in them. If that still isn't enough drive space, there's also another spot for a 3.5" hard drive. (The A500's internal drive is still accessible on the right, of course.) There's an internal fan to keep everything cool, the case is strong enough to sit your monitor on, and there's also a place to plug it in, so you can turn on the whole system with one switch. Retail price is \$429.95. 130A Knowles Drive, Los Gatos, CA 95030. 408-378-0340.

## MODEM FAX

**A**pplied Engineering has some new telecommunications gear, the **DataLink** and **SendFax** combination, that we're finding indispensable around here. (Actually, Tom swears the only way the *Datalink* will leave his desk is to have it pried from his cold, dead fingers.) There are two basic models and several variations on those. The **DataLink Express** (\$249 base price) is an external version, while the **DataLink 2000** (\$159) is internal. Each of these have all the standard features you'd expect in a good-quality modem and can be upgraded to MNP-5 capability, which is required for the models with *SendFax* capability (\$299 for the Express, \$228 for the 2000). And it's this ability to send faxes directly from your Amiga that sets these gadgets apart from regular modems. After installing the *SendFax* software, you can send faxes directly from your Amiga to any standard Group 3 fax machine. It works by intercepting printer output, redirecting it to a fax spooler, and then transmitting it through the modem. In other words, you compose your fax in your favorite wordprocessor, give the wordprocessor the command to print, and *SendFax* takes over, popping up a window and sending the output as a fax instead. It's all very easy, and will also work with graphics. The

software includes a phonebook, cover-sheet option, and options to send faxes automatically at pre-scheduled times. The device won't receive faxes, but if you're more interested in giving than receiving, or already have a fax, this is just the thing. Contact AE for more information. PO Box 5100, Carrollton, TX 75011. 214-241-6060.

## EXTRA DISPLAY

**I**f you don't want to invest in a multi-sync monitor, but still want more and better display modes for your Amiga, *Black Belt Systems' HAM-E*, which we've been seeing at shows, is now shipping. The device is a smallish (8.5" x 9.5" x 2") metal box that plugs in between any model of Amiga and a standard RGB Amiga monitor. In addition to the regular modes, *HAM-E* also provides two new ones. One shows 256 colors onscreen, chosen from a palette of 16 million (24-bit color), and the other provides a full 18-bit display, which can put over 262,000 colors onscreen at once. The box comes with rendering software that will take a regular 24-bit IFF file and turn it into a *HAM-E* image of either variety, though the company also strongly recommends ASDG's *The Art Department*, which directly supports *HAM-E*. Besides the rendering software, Black Belt also provides a paint program (they'll even give the C source code for it for free to those interested), which has the basic features you'd expect, like lines, circles, custom brushes, a 256-color palette, and the like. Probably the most noteworthy point to be made about *HAM-E* is what it doesn't do: it doesn't require any special software drivers, no system patches, or anything else to complicate your life. Images can be displayed with just about any standard Amiga viewer or slideshow program, including *AmigaVision*, *CanDo*, *UltraCard*, *The Director*, *SuperView*, and so on. It's also compatible with 2.0. Cost is \$299.95. Black Belt Systems, RR1 Box 4272, 398 Johnson Road, Glasgow, MT 59230. 406-367-5513.

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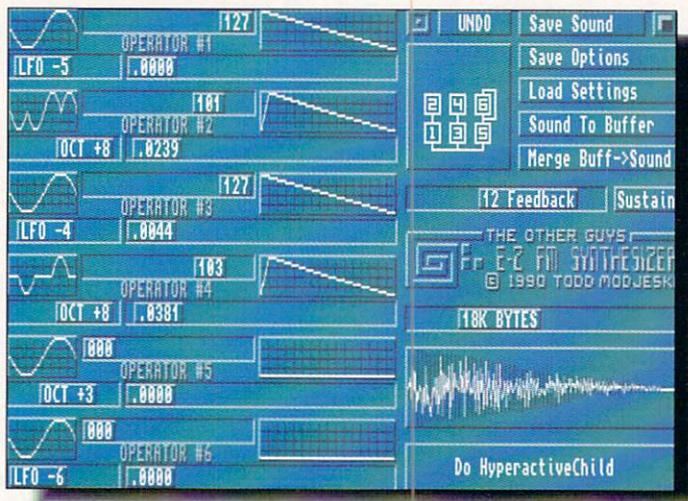
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# NEW PRODUCTS



Create your own Amiga sounds with The Other Guys' *E-Z FM Synthesizer*.

## SOUNDING OFF

We have been rattling the walls of the *.info* offices lately with *The Other Guy's E-Z FM Synthesizer*. It's a killer Amiga internal sound synthesis and editing engine that's so easy to use, even non-musicians will have their neighbors calling the cops about the noise in a matter of minutes. Most internally generated Amiga sounds tend to sound a little flat and artificial, but the ones from *E-Z* (the title is a tad unwieldy, isn't it?) are rich and full, every bit as good as what you'd hear from a dedicated keyboard. We've barely gotten past the 75 included examples into generating our own sounds from scratch, but the process is very simple. There are six fully editable sound envelopes (operators) that can be mixed and combined via 32 FM algorithms. The length of the sample can be set (up to 64K) and it's reasonably fast, generally taking no more than about 20 seconds to finish the sound of reasonable length (about 16K seems to work well for most of them), and even has a keen waveform animator that shows graphically how your sound works. The resulting sounds can be used in *Synthia*, *Sonix*, *Deluxe Music Construction Set*, and most other Amiga music programs, including Chris Moulios' *Music* program included in Gold Disk's *All In One* (combining this with *E-Z* makes a good, inex-

pensive way to get started in Amiga music). What makes *E-Z* so much fun, though, is that it lets you play the resulting sound on your Amiga keyboard. If you don't have your Amiga hooked up to a stereo system, this is one of the best reasons yet to do so. Cost is \$59.95. 55 N. Main St., Suite 301-D, Logan, UT 84321. 801-753-7620.

## 24-BIT WARS

24-bit graphics are the hottest thing in Amiga-land these days, with a number of companies about to bring out display cards so you'll be able to see all 16.7 million glorious colors on your multi-sync monitor. *M.A.S.T.* is firing one of the first salvos in the battles, bringing out their **ColorBurst** display board. Demoed at the last couple of Amiga shows (AmiExpo Anaheim and Amiga '90 in Cologne), the board has several capabilities that the others don't. It has the standard resolution of 768 x 480 (580 PAL), but is compatible with NTSC, PAL, and SECAM and has true 24-bit RGB video output, along with sync out. It can perform some special effects (like 24-bit scroll, explodes, dissolves, etc.) and can even overlay and mix Amiga graphics with the video image. The board also has a passthru, so you can still use your regular Amiga display. The *ColorBurst* has a built-in graphics co-processor, 1.5 megs of memory, and

even a real-time 24-bit paint program (note that this is not a HAM paint program, but lets you paint directly in 24-bit color). Best of all, though, is that the thing retails for a very reasonable \$495. 1395 Greg St. #106, Sparks, NV 89431. 702-359-0444.

## APPLIANCE

We don't know what prompted this craze among developers to name Amiga peripherals after kitchen appliances, but find the whole notion very peculiar. What's next? An audio disposal? An A/V electric skillet? Anyway, the latest of these devices is *Progressive Peripherals' Video Blender*, an external device that's a sort of, well, video blender. It combines a video switcher, genlock, audio mixer, luma-keyer into a single unit. There are four video channels: NTSC RGB (externally synchronized) in, Amiga RGB in, composite video in (with pass-thru), and internal 16-million color generator for background. Video cameras, 24-bit framebuffers, and the like can be slaved to the thing, and *Progressive* states that with the technology they use, no time-base correction is needed. The *Video Blender* box has sliders for hue, saturation, and contrast, with the included software allowing 256 levels of RGB for up to 16 million colors. You can also mix three of the four available channels and the stereo audio permits 256 volume levels. *Progressive* also says that they use high-speed multiplexing in the keying operations, including picture-in-picture effects, to eliminate chroma-creep (one of our favorite villains) and preserve crisp edges. The *Blender* also comes with *MixMaster* (we knew it! another kitchen appliance!) software that includes over 2800 pre-defined wipes in addition to a custom wipe generation system. You can also save the *Blender's* current settings so you don't have to start from scratch each time you want to use the thing. It can even be connected to NewTek's *Video Toaster*. PAL and NTSC versions are available, and the price is \$1295. 464 Kalamath St., Denver, CO 80204. 303-825-4144.

IMAGE PROCESSING'S COMMON GROUND



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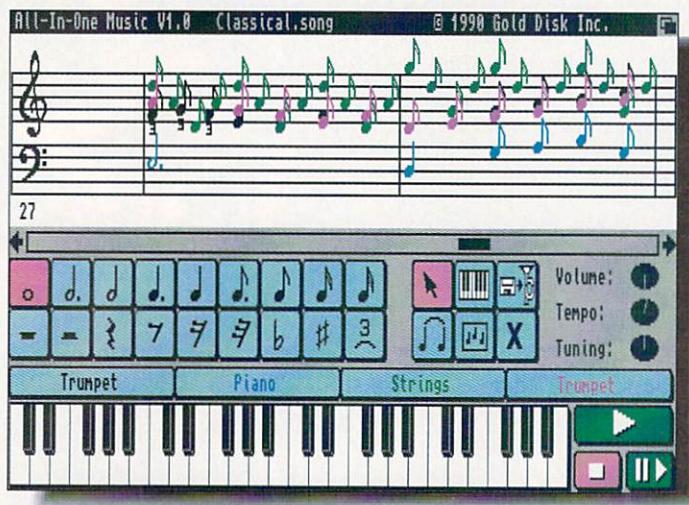
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# NEW PRODUCTS

Music, one of several programs included in Gold Disk's *All In One*.



## STICK IT

We laughed when we first saw this odd-looking device, but we aren't laughing any more. *Duggan DeZign's Stik-Gripper T.C.S.* (Total Control Stand) is a plastic stand for your joystick. Shaped something like an oversized italic capital I, it provides a little stand for your joystick and it's held steady because you sit on it. That's right, it fits between your legs and is held down with your thighs. It sounds silly, we know, but Tom swears by the thing and won't let it out of his office (hands have already been bitten and there are claw marks on a few arms). If your joystick doesn't have suction cups to keep it stuck to the thing, it comes with velcro strips. Price is a mere \$19.95 and it will certainly ease the fatigue caused by long hours of holding a joystick. 300 Quaker Lane, Suite #7, Warwick, RI 02886. 401-823-8073.

## UNI-WARE

If you're just starting out in Amiga-dom, you know how hard (not to mention expensive) it is to get your software collection going. *Gold Disk* has released a collection aimed at new Amiga owners that will at least provide the basics. *Gold Disk's All In One* includes *Write*, an elementary wordpro-

cessor written by Chris Zamara and Nick Sullivan, who also happen to be the editors of *.info*'s technical section, as well as being the authors of *TransWrite*, the wordprocessor of choice around the *.info* offices. The package also includes a basic paint program called *Draw*, along with *Music*, a simple note-and-staff based music program (see the entry in this section on the *E-Z FM Synthesizer*), and three games. Of the games (Tom can't resist a little reviewing here), the one called *Intrigue* is a madly addictive solitaire tile-matching game that's sort of a cross between dominoes and *Shanghai*. It's not anything outstanding, but will certainly cause some hours to be wasted. This whole Amiga starter kit can be yours for \$79.95. PO Box 789, Streetsville, Mississauga, ON Canada L5M 2C2. 416-828-0913.

## AT ONCE, AT LAST

We have been hearing about a European-designed 80286 AT emulator for the Amiga for some time and finally managed to track down a few details. The *ATOnce* comes from German company *Vortex* and works with either the A500 or A2000, though an adapter is necessary to install it in the 2000. It's a tiny little board that includes both a 68000 and an 80286 CPU (you keep your Amiga's original 68000 as a

spare) and plugs into the Amiga's motherboard. Running as a task, the *ATOnce* provides 640K DOS memory on a 1Mb Amiga, with anything above 1.5 megs available as Extended or Expanded memory. It works with any autobooting AmigaDOS hard drive, operates with up to 24 32Mb partitions, and will boot DOS (the MS kind) from the hard drive. Note, however, that MS-DOS is NOT included, though it supports versions 3.2 to 4.01. It will also handle DF0: as a 720K MS-DOS drive as well as support external drives in the same way. Graphics emulation modes include CGA, Hercules, Olivetti, and Toshiba 3100. We haven't heard yet how much the thing costs. More information can be had by E-mailing Vortex on CompuServe at 100016,2545. Their German address is Falterstrasse 51-53, D-7101 Flein bei Heilbronn, Germany. 07131/58 72-0 voice, 07131/5 50 63 fax.

## TAXING SITUATION

Bleeech! It's time to start thinking about taxes again. *dataTAX*, which used to be published as *Tax-Break* by Oxxi, has been released in a 1990 edition by the original developer, *Datamax Research*. It includes all the necessary forms (onscreen and printable in IRS-acceptable format) and schedules. The unique aspect of this package is electronic filing. While you can only do this if you have a refund coming, the problem up to now has been that electronic filing requires running your return through service bureaus that only support IBM filing. Datamax is offering to handle the process by allowing you to upload your return to their BBS, after which they will run it through the approved PC data checking program and file the return for you, provided, of course, there aren't any errors in it. The price of the software is \$75 US, with annual updates \$29 per year, and the fee for electronic filing is \$15. 269 Portage Road, Box 1147, Lewiston, NY 14092. 416-250-7424.

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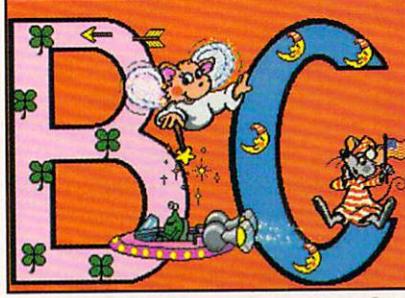
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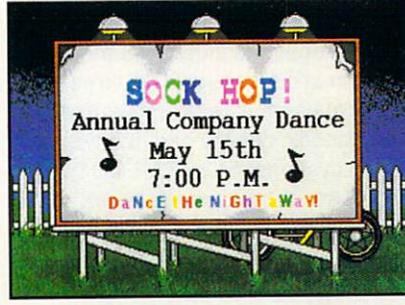
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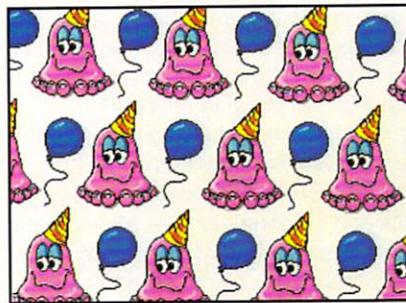
A detail of the amusing alien poster



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# NEWS & VIEWS

## SIGGRAPH UNVEILS NEW GALLERY

The annual SIGGRAPH (Association for Computing Machinery's Special Interest Group on Computer Graphics and Interactive Techniques) conference serves as the premier showcase for the most advanced, creative, and innovative computer graphics concepts and interactive techniques. The 1991 conference planned for July 28 - August 2 in Las Vegas will feature a new Electronic Gallery and Showcase. The gallery is intended to showcase media beyond film and video - HDTV, large-screen formats, multi-monitor systems, 3D stereoscopic display and interactive animation systems. SIGGRAPH '91 will offer courses, papers, panels, workshops, electronic theater, art and design show, special interest groups, hypermedia exhibit, virtual reality demonstrations, educators' program, and hardware/software exhibition. For conference information contact SIGGRAPH at 312-644-6610.

## .info UPDATE

✓ In the interview with Victor Osaka in issue 37, we incorrectly listed the membership fee for the Turbo Silver SIG as \$12. The real fee is \$15. For more info, contact *Turbo SIG* at 1341 Ocean Ave. #349, Santa Monica, CA 90401.

✓ In case you'd been wondering, Sunrise Industries *Perfect Sound 3* does indeed work with Oxxi-Aegis' *AudioMaster III*. Previous incarnations had been incompatible, but Sunrise has conducted tests and found everything to be working correctly with these new versions. Sunrise is at 2959 S. Winchester Blvd., Suite 204, Campbell, CA 95008. 408-374-4962. Oxxi is at PO Box 90809, Long Beach, CA 90809. 213-427-1227.



On November 21, 1990, the life of Barbara Bohn was ended by a senseless act of murder. As the owner and president of California Shareware, she will be remembered by the Amiga community as a friend. She is survived by her husband Dan Bonachea and two daughters, Margaret Killeen and Sheryl Bohn.

If you feel inclined to make a donation in Barbara's memory, please make your donation to a charity which supports the victims of violent crime.

Thank you,  
Dan Bonachea



Barbara Bohn  
Born September 3, 1944  
Died November 21, 1990

## SPA CRACKS DOWN

The Software Publishers Association continues to pursue anti-piracy activities as its top priority. Their goal is to decrease as much as possible the unauthorized copying of software through litigation, education, and other means. Over the past two and a half years the SPA has initiated over 60 lawsuits and an equal number of corporate audits against a variety of pirates including corporations, computer dealers, BBS's, mail order operations, and the like. "Don't Copy That Floppy" is the slogan of the new anti-piracy campaign. To report incidences of software piracy call 800-388-PIR8.

## COMMODORE NEWS

You can just about tell what season it is from the regularity with which Commodore changes its executive officers. Commodore International has announced the appointment of James Dionne as General Manager of its U.S. sales company. Dionne has been with Commodore eleven years, most recently as General Manager of Commodore's Canadian sales subsidiary. He succeeds Harry Copperman, who joined Commodore in 1989 as President and Chief Operating Officer.

Copperman has been appointed Vice President of Commodore International with "new responsibilities, including Amiga multimedia strategies."

Commodore also announced reductions would be made in manpower within U.S. operations, primarily in the areas of administrative and factory overhead. This action was reported to be partly due to the reorganization of certain unnamed functions and is expected to result in improved operating efficiency. Commodore has refused comment on the nature of these cuts.

## TOASTER IS TOPS

The Video Toaster by NewTek is garnering awards and accolades at every turn. *Byte Magazine*, that bastion of IBM idolatry, featured the Toaster prominently in their year-end *Byte Awards*. *Byte* voted the Toaster an Award of Excellence and called it "one of the coolest video/graphics products of the year."

The Kansas Film Institute recently presented NewTek with the first ever OZZI Award for Special Technical Achievement in recognition of the revolutionary nature of the Video Toaster at their annual Film & Video Festival held last December in Lawrence, KS.

# OVERDRIVE



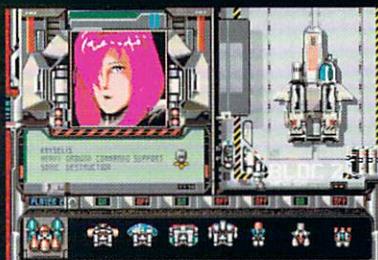
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# NEWS & VIEWS

## AMIGA PLUS FULFILLS SENTRY SUBS

Subscribers of the long-deceased, all-review *Amiga Sentry* magazine will be pleased to learn that *Antic's Amiga Plus* will be fulfilling *Sentry's* outstanding subscriptions. Former *Sentry* publisher and editor-in-chief, Tom Bucklin joins *Plus* masthead as a contributing editor, along with ex-Amiga World editor-in-chief Guy Wright. Could this be a trend?

## WAYNE'S ART WORLD! WAYNE'S ART WORLD!

Will Mixed Media is asking for submissions of computer art from Amiga artists for a series of cable access TV shows featuring Amiga-based artists and their work. Amiga artists should call 914-657-2914 for more information.

## AMIGAS IN THE MEDIA

On "Hack," the new CD from Information Society there's an Amiga 500 featured on the cover, but in the credits they thank Apple Computer. Go figure!

Ricky Yu  
San Jose, Costa Rica

A recent episode of the TV show *The Flash* (in which Flash battled with the Ghost, a criminal from 1955 who was cryogenically frozen until 1990) showed video game monitors in an arcade that were playing the Amiga games *Shadow of the Beast* (Psygnosis) and *Sidewinder* (Arcadia.)

Frank LeClair  
Clatskanie, OR

Success magazine, December 1990, featured an article called "The Pulse" by Richard Poe which focused on Desktop Video. The Amiga is mentioned almost matter-of-factly in paragraphs describing NewTek's Video Toaster.

Pete Wason  
Bellingham, MA

The December 1990 issue of *Automobile* magazine has a drawing of the right side of an Amiga 500 on page 50.

Brian Poff  
Alexandria, VA

Miroslaw Rogala, an international acclaimed video and multimedia artist, recently exhibited a 16 monitor videowall composition commissioned by Chicago's

department of Cultural Affairs and displayed at the Chicago Public Library Cultural Center in conjunction with the exhibition *Chicago Designs: Fashion, Photography, Architecture*. Rogala's video piece surveys the work of noted fashion designers and photographers. Rogala used an Amiga to design, digitize, and animate his videowall creation.

JKC, Iowa City, IA

## THE RUMOR MILL

**DISCLAIMER:** The following are among the most entertaining rumors we've heard the past month. They are presented for your entertainment and amusement only. Please do not make any important decisions based on these rumors, as some will prove to be inaccurate or just plain false.

Up until about a year ago, we kept hearing that Hewlett-Packard was negotiating to buy Commodore. Our sources now say that HP finally got fed up with the lack of progress in the talks and packed up their briefcases; that's why there's a new line of HP workstations with suspiciously Amiga-like specifications. Now we hear that Commodore may be talking with another corporate giant interested in turning Commodore into a division of their far-flung empire. With video the hot new market for the Amiga, how does "Commodore Business Machines, a division of SONY Corporation" sound to you?

You say you'd like to hear three good reasons why CD-I may beat out CDTV in the CD/ROM-based "home video appliance" market? Okay, how about these: (1) CD-I is backed by SONY and Phillips, two huge companies with lots of marketing savvy, advertising mega-\$, and impressive distribution channels, while CDTV is from Commodore; (2) CD-I has been under

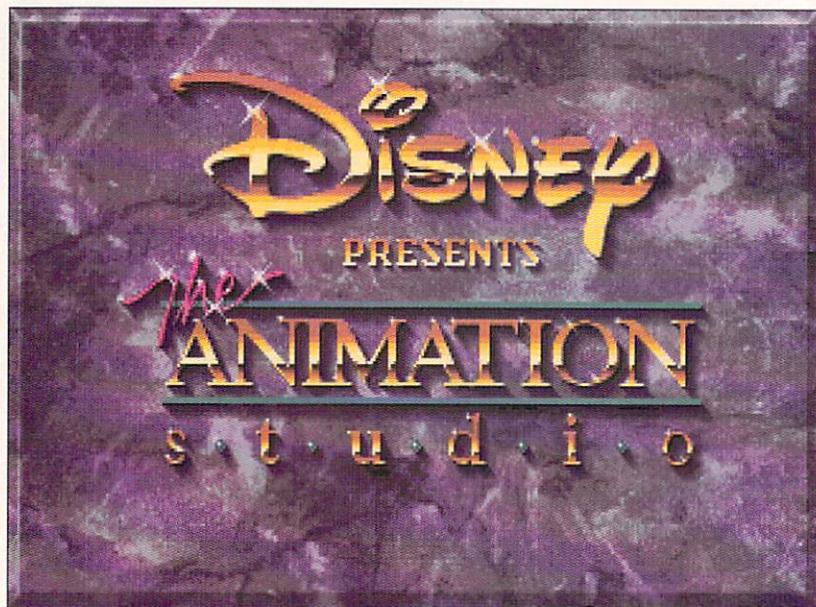
development for five years and has gotten a ton of advance publicity in the computer and popular press, while CDTV is only a year old and wallows in almost total obscurity (Commodore won't even release any review units to the press, like us for example); and (3) CDTV is a single unit from a single company (Commodore) while CD-I has lined up lots of third party developers.

What will personnel cutbacks in Commodore's U.S. marketing, administrative, and manufacturing arms mean for the future? Too soon to tell, though it dovetails nicely with rumors we had heard several months ago that CBM U.S. operations would be cut to the bone or even shut down if U.S. sales didn't pick up soon.

We received our "final release" 2.0 version of the Amiga's operating system the first week in January. It should be available as a software upgrade - and possibly in ROM - by the time you read this.



# Brad Schenck on Graphics



**Brad goes  
behind the  
screens to talk  
to Leo Schwab,  
the software  
artist behind  
Disney's  
Animation  
Studio.**

**W**hether it's from his many Workbench screen hacks - visual "jokes" that appear to take control of your Amiga display - or from his animations like "The Dream Goes Berserk," you've likely heard of Leo Schwab by now. [We originally interviewed Leo in issue #19. -Ed.] Leo has been working for Silent Software for some time on the program that became *Disney Presents: The Animation Studio*.

This month we're taking a look not just at a program, but at the people behind it. *DP:TAS* is an important product that's teamed some early Amiga talent with one of the largest publishers of anything on the face of the planet, and here's how it came to be. (The 'Reichart' below is Reichart von Wolfsheild of Silent Software.)

**BWS:** *Disney Presents: The Animation Studio* (or *DP:TAS*) was a long time in development, and many of us on the West Coast saw it at various stages during that time. How and when did you begin working on *Onion*, as it was then called?

**Schwab:** About two and a half years ago, Reichart described this idea he had for an animation program which, up until then, no one he had described it to had understood what he was talking about. He described

how professional animators work with translucent paper, and asked if I could write a program that would emulate the "Onion Effect" on the Amiga screen. I thought about it for about five seconds and said, "Sure, that's possible."

A short while later, I had a very primitive program running. All you could do was freehand-draw and move forward a cel (and quit). You couldn't load or save or do anything else useful. It was just a proof-of-concept program. As I recall, Reichart was delighted with it, since he finally had a tangible manifestation of his idea.

It was this program that evolved into *Onion*. It grew steadily, features being added as they were needed or requested. Eventually it turned into a useful program. It became our in-house animation tool.

**BWS:** Several professional animators tested *DP:TAS* while it was in development; before going to Disney, Amiga artists like Eric Daniels, Heidi Turnipseed, and Steve Segal all had some input. What was it like, 'designing to order' for these gifted animators?

**Schwab:** Most of the feature requests came from Reichart. Occasionally he would say "Eric wants this," or "Heidi does it this way," or something along those lines. Occasionally, I thought some of the requests were ludicrous; others I liked. I did add one or two of my own goodies as well.

In general, working for Reichart is not for the faint of heart. He will accept nothing less than the very best. Yes, it's tough, and sometimes infuriating, but when you're done, you've got something that is The Very Best. And you did it.

**BWS:** The program itself is a practical re-creation of what has been the structure of an animation studio, with the different modules of *DP:TAS* representing the different departments in a studio. How much did Disney, the publisher, affect the program?

**Schwab:** The program had been nearly completely designed by the time Disney was approached. The only major feature that was added to *Onion* (Pencil Test) at their firm request was copy protection.

They did, however, contribute heavily to the overall quality and professionalism of the product. We weren't going to support color until later, but Disney encouraged us to do so right away, as it would make the product more complete. Their testers were also an immense help. As programmers, we tend not to do weird things (well, uh, I mean, we tend not to do things we suspect might make the program die). Dis-



Leo Schwab and Reichart von Wolfsheid

ney's testers did all sorts of weird things to make the program die. They were the object of a number of (private) epithets on my part, but we owe them a lot; *DP:TAS* is much more solid as a result.

Also, their decision to include digitizations of their morgue was a masterstroke. I occasionally bring up the program and flip through their stuff, marveling at the detail. I could spend weeks studying just the feather in Mickey's sorcerers' cap.

Oh, yes, the manual. Disney made that happen. It was written by Cathy Breza and Sam Palahnuk, and everyone loves it.

**BWS:** In what part of the software do you take the greatest pride?

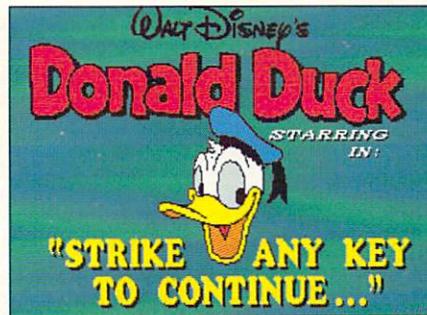
**Schwab:** The IFF parser. Pure magnificence. I cannot take all the credit for that. Stuart Ferguson (creator of *LightWave Modeler*) designed most of it.

We had gotten fed up with the sorry state of affairs with regard to available IFF parsing code. So we got together and decided to try and fix that problem, if only to make our own lives easier. We worked on it part-time and exchanged lots of mail over The WELL. After about eight months, we had the core parser created, which I happily compiled into *Onion*. Suddenly, my IFF ILBM read/write code became clean. Life was wonderful. I was delighted.

I was even more delighted when Commodore agreed to buy the parser and make it part of Kickstart 2.0. It now lives in the 2.0 LIBS: directory as *iffparse.library*. We're terribly proud... :-)

I'm also rather pleased with the way the file requester turned out. Yes, I know, it's completely unlike everyone else's, but the other "standard" file requesters I could have used either had fatal bugs, were poorly designed, or didn't have all the goodies I wanted. So I rolled my own.

**BWS:** Not only is the program almost legendary because of the interest it aroused while you were at work on it, you're a bit of a legend yourself. Your screen hacks, *VideoScape* animations, and miscellaneous



In this sample color animation, Donald loads an animation...

efforts in the Amiga community are well known. Was it animation that attracted you to the Amiga?

**Schwab:** Yes.

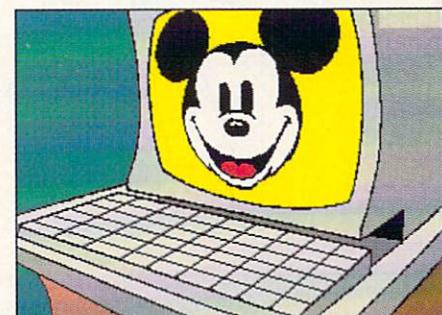
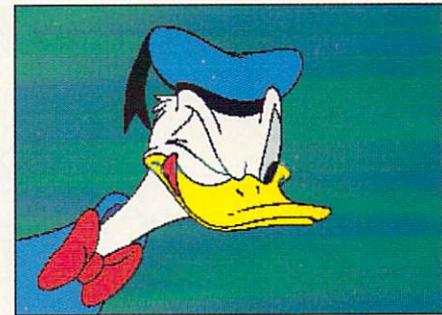
Oh, you want me to elaborate?

I've always loved computer animation (the 3D flying logo kind). When I saw the Amiga for the first time at SIGGRAPH in 1985, and was utterly floored by "Boing!," I knew it would be able to do the kind of animation I wanted. I immediately inquired as to how to become a developer. About a month later, I had an A1000.

I quickly learned that the Amiga was a bit more complicated than the C64 I had, and considerably more delicate than the UNIX system I was hacking on at junior college. But hey, it had a C compiler (Lattice 1.0), and the graphics were *damn* quick, so I started hacking away.

The first program I ever wrote for the Amiga was "Art." I uploaded it to The WELL, where Jim Goodnow II grabbed it, and liked it so much that he put it on the Manx C compiler disks in the examples directory. I think it may even still be there as "leo.c."

My starting to use *VideoScape* is a really weird case. I had seen Allen Hastings' films "Verx" and "Infinite Loop," and was eagerly awaiting the program's release so I could create all those neat ideas I've had floating around in my head. When I finally got a copy, I was amazed: the thing had no object modeller to speak of, and hard-coded limits on how many points and



© 1990 The Walt Disney Company

...but when his computer shows Mickey instead of Donald, he loses his cool!

polygons you could have. I promptly flamed it on USENET.

A week later, I showed up at SIGGRAPH in Anaheim. Allen was there, and wasn't too thrilled with me after having read my USENET flame. Then I showed him this 96-frame animation I made over the weekend.

"Did you do that?" he asked.

"Yeah."

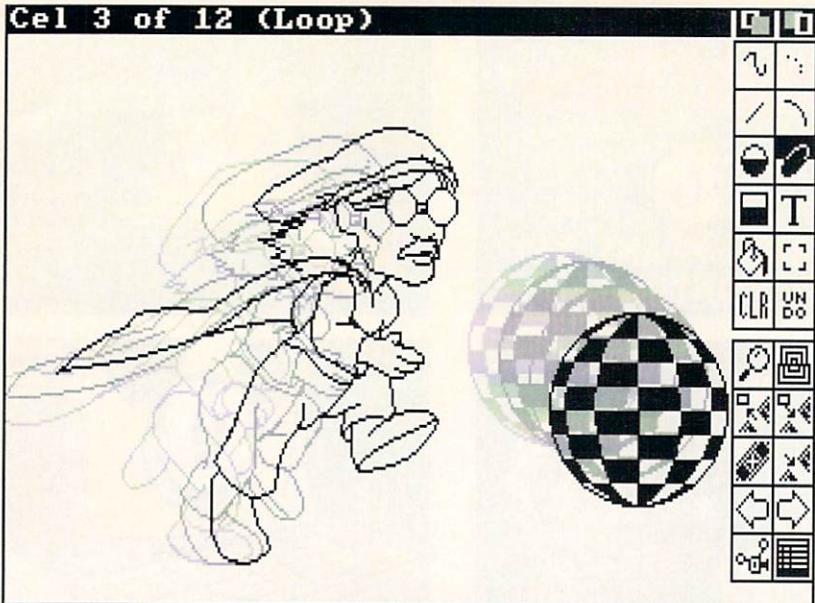
"How?"

What *VideoScape* lacked in user interface, it made up for in control. Through brute force, I was able to control every aspect of the animation, which was important to me.

Allen and I are friends now...

**BWS:** Disney's senior vice president of animation, Peter Schneider, was quoted last June in the Los Angeles Times as saying, "There will be a breakthrough at some point in terms of animation with the computer and on the computer. But Disney-style quality animation

## Cel 3 of 12 (Loop)



Pencil Test mode lets you see several frames of action overlaid on each other.

on computers won't come for 10 to 15 years."

This sounds a little like Disney shooting itself in the foot on the eve of their release of *DP:TAS*; though it seems obvious that what he's driving at is the need to produce drawings which can't be distinguished from hand drawn originals.

Where do you see *DP:TAS* going in the future, and what do you think about that "10 to 15 years?"

**Schwab:** Well, clearly you can do Disney-style animation on a computer now. I think Mr. Schneider was referring to a more automated process, where the tweens are computed rather than drawn by humans.

10 to 15 years? I'd say that was reasonable.

Astounding things have happened in just the last five years (like the birth of the Amiga). However, I'm not sure I'd want computers doing automated tweening for a "Disney-style" animated feature; I'd still want people in the loop to check what the computer was cranking out and tweak it a bit. But pencil and paper is probably on the way out; pixels are just so easy to manipulate. In my view, the only remaining major problem is creating a computer drawing facility that lets you draw with pixels the same way as you do with pencil and paper. Graphics tablets don't cut it; you're moving your hand in one place and looking somewhere else. A light pen and a Zenith FTM monitor mounted in the surface of a desk would be interesting to try out...

As for *DP:TAS*, that will probably continue to evolve. There has been considerable interest expressed from various sources in getting it ported to other hardware platforms (yes, unfortunately the IBM/PC is one of them). As it finds its way on to other platforms, it will doubtless evolve to meet the needs of the particular class of user on those machines. I like to think the Amiga version will continue to lead the way.

.info's  
Graphics Guru  
examines  
Disney's  
Animation  
Studio.

## Recreating A Traditional Studio On The Computer

In traditional cel animation studios, a film goes through several stages between the initial concept and the film can. The idea is first thoroughly 'storyboarded,' which is much like scripting the story with drawings; these storyboard drawings are then expanded into 'keyframes' and background art, representing the characters and animated objects and the settings against which they'll move.

The keyframe drawings are then handed to in-betweeners animators who fill in the gaps between these highlights of character motion. The drawings, reproduced on transparencies, are passed to the Ink and Paint department where they're given color, and finally the painted cels are superimposed on the background art to be photographed with timing based on the storyboard and the Exposure Sheet the photographer uses during shooting. This Exposure Sheet determines not just the speed of motion, but enforces synchronization with the soundtrack.

This basic process hasn't changed much since the Thirties. The biggest change was, of course, the introduction of color, making the ink and paint stage more critical. It's a process that works quite well, but is labor-intensive; many people are involved in production at every stage, and the longer and more ambitious the film, the greater are the hours and cost.

Nobody (that is, no one who's survived in the film business) knows these lessons any better than Walt Disney Studios. While they didn't develop the concept of this program themselves, it's clear why they chose to back it.

*The Animation Studio* doesn't attempt to design an entirely new process for making animations; it adapts the process into one that can be performed quickly and more easily than was possible without computers. That's a pretty good description of what artists want from their tools - not a Brave New World, just a better and faster one.

### WHAT YOU SEE...

*DP:TAS* comes on three disks, with a tutorial manual and a reference manual. One disk contains the program itself. The second is a 'morgue' disk of Disney animations from *Alice in Wonderland*, *Lady and the Tramp*, and other classic films. These animations, in Pencil Test format, are protected in that the user is unable to save out modified versions of them within *DP:TAS*. This is Disney's way of protecting their copyright on the artwork. The third disk holds two versions of a short Donald Duck animation, in both black and white and color.

The programs that make up the Studio are easily installed on your hard disk. Unfortunately Disney chose to implement a manual-based copy protection scheme that forces the user to type in a word from the manuals before starting the software. While this is less obnoxious than disk-based copy protection it's irritating to those of us who aren't thieves. Finding this in

an application program seems a bit... Mickey Mouse™.

With that out of the way, though, the rest is much more pleasant.

*DP:TAS* is divided into three modules: Pencil Test, Exposure Sheet, and Ink and Paint. The only stage that's missing from the studio metaphor is storyboarding.

In Pencil Test, one works on the drawings to be animated in black-and-white, in all display modes except for extra halfbright and HAM. Overscan is well supported. There's a useful selection of drawing tools, and the designers have tried to make the software conform to the structure of *Deluxe Paint II* in many ways (including hot keys) so one feels very much at home from the start. The onionskin features enable the user to 'see through' the current drawing to the previous frames of animation, so that it's easy to keep track of where a character's coming from in the current cel. The user can control how many frames show through, and if the default greys for the onionskin colors aren't pleasing, they can be modified.

The Exposure Sheet enables the user to set timing for individual frames, to re-use frames in various combinations, and to synchronize sampled sounds or *Sonix* format musical scores with the animation. All of these timing issues can be worked out with the animation in Pencil-Test form before painting the final frames.

The Ink and Paint module is a simple paint program, designed mostly for filling the Pencil Test drawings with solid and dithered colors; I don't mean to imply that it can't do more, but for intensive color work you might want to move the frames into your paint program of choice. (If you choose to do that, the final frames have to be loaded into Ink and Paint as successive backgrounds, since they won't agree with what *DP:TAS* expects to find in one of its own files - but the Exposure Sheet settings will still work with these modified frames.)

An unusual feature in Ink and Paint is an 'NTSC Filter' that uses brute force to eliminate colors that aren't legal in an NTSC video signal - you'd do well to save out the original version first, though, as this doesn't seem to be Undo-able.

The program will output its own CFAST format files, which use Exposure Sheet settings to control playback, or IFF ANIM files to be used in other software.

*DP:TAS* also comes with two player programs called *Flicker* and *Flick*. The differences between them are that *Flicker* includes support for *Sonix* scores and is not freely distributable due to licensing problems with the *Sonix* drivers. *Flick* - contrary to the manual - will apparently still handle sampled sounds, though not the *Sonix* scores, and may be distributed with your animations and through telecommunication services.

### ...AND WHAT YOU GET

In all, *DP:TAS* is a very powerful set of tools for cel animation. The designers did an excellent job of bringing the studio environment together on the desktop.

### Cel 3 of 12



You can color in the frames of your finished animation for a true "Disney cartoon" look.

As with any initial release there were a few 'gotchas' in version 1.0. It would be nice if Pencil Test's tool box would resize with changes in screen resolution. It gets quite small in high res. The area immediately below the Tool Box, in the higher resolutions, doesn't display the artwork that should be there; this finally made sense when I found that it becomes a large, invisible gadget that restores the current brush to a single pixel brush. When stepping through frames in Pencil Test it's easy to add frames by mistake; turn 'Loop' on to avoid this and just cycle back to Frame One instead of adding a new last frame.

When you import IFF images into Ink and Paint, the color ranges in the pictures are automatically cycled during playback until you turn cycling off. In my own experience cycling colors are the exception, not the rule, so I'd expect this to be turned off by default.

Of course there are also things on the wish list, like loading in ANIM files as backgrounds (a frame of the ANIM for each *DP:TAS* frame), ANIMbrush support, and the ability to make Onion Skin show future frames instead of past ones (important when in-betweening the keyframes). Although it's asking for a different style of animation I found myself missing *Deluxe Paint III*'s Brush Move requester, so useful for complex scaling and rotations.

It's obvious when talking to the developers that they're well aware of what we're likely to want, and I expect that future revisions of the software will get better and better.

**DISNEY PRESENTS: THE ANIMATION STUDIO v1.0**  
★★★★  
**\$179.00**  
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**Burbank, CA 91521**  
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**Note:** *The Animation Studio* was tested on an Amiga 2000 with a Commodore A2630 68030-based accelerator and seven megabytes of RAM, and on the same system using the 68000 with five megs.

# HEURISTICO suite

by Sue Albert

**W**ith awesome splendor an icy peak in the Monte Cristo Glacier Range fills the video screen. The camera cuts to a procession of brightly clad teens gamely trudging up the mountain's flank with heavy backpacks. Suddenly the camera pulls far back down the trail just when the rescaled tiny figures are abruptly swallowed by dense forest. With that one wordless, sensitive motion, video producer Ellison Horne captured the fear, the courage, and the vulnerability of inner city kids experiencing their first wilderness adventure. That scene was part of a video commissioned by the Lakeside School in Seattle, Washington to raise funds for LEEP, an educational enrichment experience offered annually to bright 14-year-old students considered "at risk." Purposely scheduled during the critical months before participants enter their first year of public high school, LEEP attempts, with a one to six ratio of dedicated teachers, to help students develop study skills and to raise their educational and vocational expectations.

As an alumnus of the LEEP Program himself, Ellison Horne can attest to its life-changing effects. "It was profound. It gave me the confidence to trust myself. I'm dyslexic and I have problems reading.

Even after LEEP I continued to have difficulty in the public school system. It wasn't geared to the way I learned. I felt like high school was actually interfering with my education. I dropped out, but that didn't stop my education. I went to the library where I independently studied things that intrigued me. I realize now that the significance of LEEP is not that it is helping kids at risk, but that it is a civilized system of education. It's why I am now doing video work."

Working alone, Ellison has produced over 35 video documentaries, promotional tapes, and films for training and education since 1983, when he first purchased a consumer camera. Except for his independent study in film and video at the Northwest Film School in Seattle and a quick class after he bought the camera ("Video For Fun and Profit") Ellison is totally self-taught. Aided by great patience and an intuitive "eye" for the brief filmic moments revealing the essence of a subject, he pushed, squeezed, and prodded professional results out of that first camera. In post-production editing he mercilessly honed down hours of tape into tight and powerful statements without draining away the wit or humanity. "Post-production is where my work takes on a life of its own," he says. His approach worked. "After six months I was earning a living."

Sue Albert  
interviews  
video  
producer  
Ellison Horne.

Now Ellison Horne Video Productions boasts a Panasonic WV-200 CLE Super VHS Camera, two Panasonic Super VHS decks and VHS monitors, a Realistic VSC-2000 portable cassette recorder, two Alesis Midiverb II signal processors, a VidiCraft Proc Amp, an Ensoniq EPS Performance Sampler with a Kawai MX-8R Eight Channel Stereo Mixer, plus various other electronic bits and pieces. Tying it all together and making it work as a one-man production house is an Amiga 2000 with 3 MB of Ram and an 80 MB hard drive. Horne says, "the Amiga really makes it all possible."

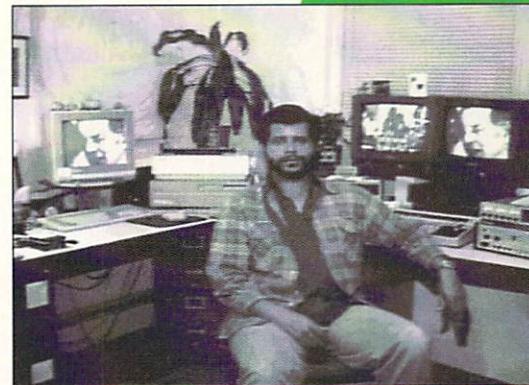
"Dealing with manuals is difficult for me because of my reading disability, so I've learned to use the Amiga and the software in the same way I did the camera, with long periods of trial and error. Some things had huge learning curves, but I did it. I tell everyone that if I can do it, they shouldn't be afraid to try."

Ellison makes it all look easy now. "For me, using the Amiga is like a partnership... interacting instead of just controlling a machine. It lets me use effects, but use them appropriately and subtly. With the Amiga I single-handedly produced a video in one day. The commission came from the Presbyterian Hospital for a video to use during counseling of people with a terminal illness. I shot it in one day, edited it that evening, and delivered it the next day. They were pleased."

Ellison's Amiga 2000 is equipped with the *Super-Gen* 2000 S-VHS genlock, *Live!*, *Invision*, *Pro Video Gold* and *Pro Video Post*, and *Deluxe Paint*. He hopes his next Amiga peripheral will be a *Video Toaster*. "The Toaster will give me and other small producers access to the powerful effects that formerly only big studios could afford. A time coding edit lister and time base corrector are on my "must" list. They will dramatically cut my editing time. I want to eventually install Unix. I'm imagining being able to communicate internationally."

The path to video production for Ellison has been propelled by social concerns and fueled by chance encounters with exceptionally caring and skilled people. "My first real job came about because I had to do alternative service during the Vietnam War. I was assigned a job in a pre-school under an inspired teacher. She helped me discover and develop a talent for teaching. I spent the next 15 years in Early Childhood Education." Along the way Ellison gained his certificate as a Childcare Instructor, was Program Director of the Beebe Children's Center in Oakland, CA, and became an active member of several professional associations. He has lectured, given seminars, and been published in educational periodicals.

Always parallel to his interests in teaching were his attraction to music, performance, and film making. "I played the accordion (now designated the official musical instrument of San Francisco) for 10 years starting at age seven and I always loved to sing. I studied with several fine voice coaches in the Northwest and did independent study of music history and performance at Puget Sound University." Since moving to the Bay Area he performs as harpist with a chamber group and has sung with the San Francisco Symphony



Videographer  
Ellison Horne  
in his  
Amiga-equipped  
studio.

Taking videos  
in a LEEP  
program  
drama class.



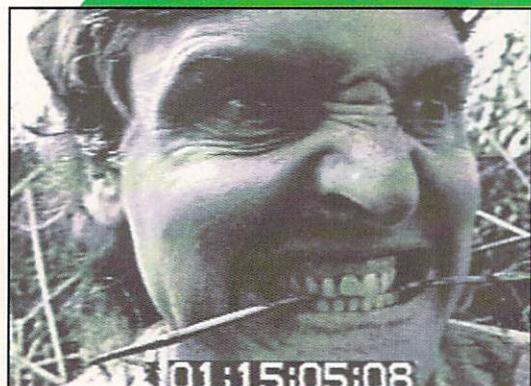
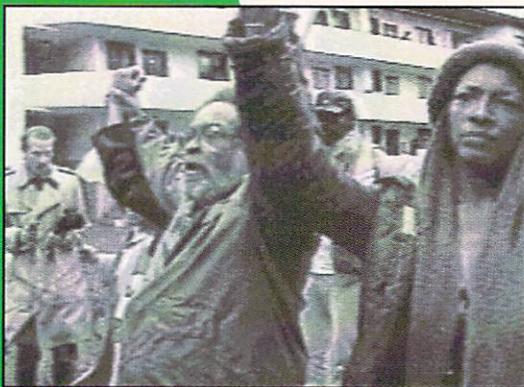
Chorus. Ellison composes most of the music for his video productions on the Ensoniq keyboard. In tribute to his teaching skills he has encouraged high quality musical "bits" for use in his videos out of participants who have never previously touched a keyboard - people as diverse as an executive director of a social welfare program and a reformed drug dealer.

Ellison's approach to his studio reflects his "jump right in" philosophy of participation. Instead of the usual cascading tangles of cables and intimidating stacks of winking electronic gadgetry, he has created a warm, intimate environment that minimizes technophobia and invites the visitor to sit down and play around. "I call it the Heuristic Suite. Heuristic is a word used both in the education and the computer worlds. I use heuristic to mean learning by the experience of doing. It's the way I work. I get jobs because of the way I work, because it isn't traditional. I don't use a script. I do several interviews to find out the client's needs, then I come to the taping with as little equipment as possible and move around to capture things as they happen. With a hand held camera and without lights, I can go into very sensitive situations - like the one at Presbyterian Hospital."

The videos Ellison produces have such a delicate touch that sometimes the credits are rolling before you realize how profoundly and dramatically you have been moved. In his film "Youth and Elders in Action," he used facial close-ups to capture the flickering expressions of a respectful and affectionate exchange between teenage volunteers and residents of San Francisco's Laguna Honda Senior Care Hospital. His first video using the SuperGen focused on the work of

My fantasy-idea  
is to get  
people more  
involved in  
the process.

A powerful video image from Horne's documentary on anti-crack marchers.



A still from Horne's satirical work-in-progress "St. Charles Mojo," written by Gary Aylesworth.

Irene Smith who does massage with AIDS patients. In it his judicious use of fades and voice-overs respects the dignity of the patient, yet reveals the serene humanity of the care giver.

A change of pace is presented in his dramatic video "Recovery Time." It documents the anti-crack campaign initiated by Reverend Cecil Williams of Glide Memorial Church in San Francisco, when he marched with supporters into one of San Francisco's most troubled public housing projects. Engaging the tenants in a direct and peaceable confrontation with drug users and dealers, major changes were made at the project by the residents themselves. In the opening scenes Ellison used the *Live//Invision* duo to superimpose recent stills with old news footage from '60s integration marches, "encasing" them using *Deluxe Paint* for a "relational" feel. So skillfully wrought was the effect that no lead-in titling was necessary. The video was enthusiastically received when it was shown at a national anti-drug conference this spring in San Francisco.

The lighter side of life is also part of Ellison's video repertoire. He has documented the joyous five-year dance project "Circle the Earth" by dancer/choreographer Anna Halprin and recorded the work of many other local artists. He likes to capture creativity in operation. "My fantasy-idea is to get people more involved in the process. I love the behind the scenes stuff - people wrestling with ideas." He recently taped the development of "Faceless," a work by playwright Genny Lin, from the initial meetings with the actors and musicians through rehearsals to the final production. There are shots of a creative jam session that

With the Amiga I single-handedly produced a video in one day.

resulted when Lim, the cast and musicians were invited to improvise in the Heuristic Suite.

This year Ellison completed a commission for naive painter Jimmy Thomas that will become a companion piece to the artist's world-wide exhibitions. Since he couldn't go to the Thomas studio on Lake Patzcuaro, Mexico, Ellison used genlock acrobatics to interweave still pictures, taken by Thomas as he developed a painting in his studio, with footage and voice-overs from a live interview in San Francisco.

Hitching up his full Amiga arsenal, Ellison lets it run wild for a work-in-progress that pits mad humor against Monty Pythonic irony. "San Francisco is a greenhouse for creativity. Playwright Gary Aylesworth needed some video work done, so I offered to trade with him for an original screenplay." Aylesworth wrote a hilarious script "St. Charles Mojo," named in honor of Charles Ingram, publisher of *Bass Master* magazine, and sweetened the deal with his active collaboration. The piece, though still in its rough cut, is an hilarious tour de force.

"St. Charles Mojo" takes the viewer 400 years into the future to witness a lecture on "Male Friendship Patterns in Relation to 20th Century Bass Fishing Cults," by 25th century anthropologist, Dr. Coleslav Brainoochoochski "That's the way it is, and because that's the way it is, sometimes it hurts me." Using *Invision*, Ellison has simulated the "reconstructed" segments discovered by the Doctor on 400 year old laserdisks that show the interactions of two inebriated bass fishermen and form the "bass-is" of his zany theories. (Readers: Do your funny bone a favor and create a demand for this tape at your next local Video Festival!)

Like most people, Ellison has discovered that when the creative juices flow, time is not always sanforized. Shelves in the Heuristic Suite are lined with tapes of unfinished and future works. There has been considerable brainstorming with mathematician Patricia Roane about presenting her new structure for understanding and teaching the natural laws of geometry. There is footage for projects on both Rollo May and the late Joseph Campbell.

Sponsored by the National Endowment for the Arts, Ellison currently has three 15-minute instructional tape segments in distribution. "Freedom to Create 1, 2, and 3" illustrate the concepts of Florence Katz and instruct educators and administrators on how to set up environments to enable the handicapped to produce serious artwork.

"Originally I didn't think of my videos in terms of television or wide distribution. I anticipated that they would be used in more intimate settings for teaching or sharing through social agencies... but lately my work just seems to be getting out more."

---

Mr. Horne may be contacted by writing:  
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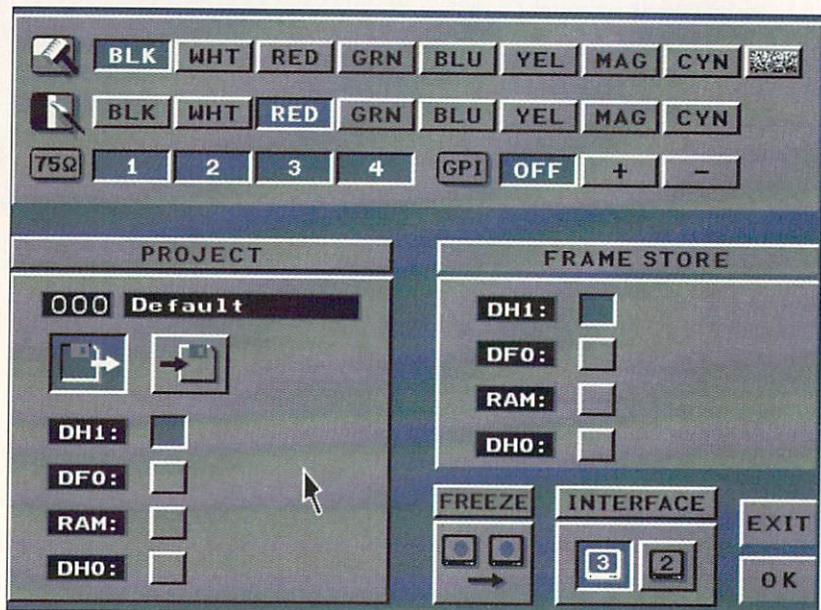


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# Oran J. Sands III on Video



Toaster preferences window.

**A**"switcher" or special effects generator (SEG) is the centerpiece of any video studio. Virtually every signal is fed to it or from it. A good SEG will easily allow your video to be routed and modified as you desire. A poor one will serve only as a bottleneck for your studio signals.

Newtek's *Video Toaster* is basically an SEG that is controlled through an Amiga interface rather than a key-per-function button panel. With four inputs and a program and preview output it allows you to select the desired signal for the program output. It also gives you the capability to choose one of many ways to change this signal. *Toaster* enthusiasts refer to these transitions as *Toaster Digital Effects* (TDE).

The main interface of the *Toaster* is the Switcher. It is here that we select the current program source, the next program source and how we want to get there. The mouse-oriented interface is designed to replicate a real switcher with a button for every feature. The screen is dominated by the buttons which select the desired transition. There are so many from which to choose that the top half of the screen must be toggled among four different screens in order to see them all. Finding any particular effect isn't easy

**This time,  
OJ examines the  
Video Toaster's  
Digital Video  
Effects and  
framebuffers.**

unless you catch on to how they've been arranged.

The first bank of effects is mainly comprised of moving frames. There may be compression of the image in these effects and the entire frame is often bumped or slid around. The second bank is comprised mostly of wipes. These involve no compression or movement of the video, but use patterned or straightforward wiping between sources. The third bank of effects features about every variation of venetian blind-style effects I've ever seen, and the fourth and last bank features several effects using the keyer which also allows decaying trails behind moving portions of the screen. These descriptions aren't complete, mind you, but generalizations. Each bank has effects that should have been on another bank but there was no room. And you'll also find that old standby, the dissolve, in the lower right hand corner of every effects bank.

Accessing each of these effects is a bit awkward at first, simply due to the sheer number of them. There will be several effects that you will use more than others, and you'll memorize their locations after a while. Of course, it would be real handy if NewTek would eventually write software that the user could configure: i.e., put all your favorite effects on a bank of their own just to speed things up.

Using these effects between sources is what the *Toaster* is all about, though its design precludes doing certain types of effects that one often expects from a DVE device. Don't expect to rotate, spin, or tumble an image (other than horizontally or vertically). The *Toaster* is also limited to moving only one source at a time. Don't expect to push one image off with another. All transitions that move an image off screen with a compression do so to and from a background color generated by the *Toaster*. The only exception is when one of the sources is one of the framebuffers with a preloaded image (an image capture, a *ToasterPaint* image or perhaps something from *Lightwave*).

The framebuffers (DV1 and DV2) are accessed the same as other sources, appearing on the program and preview source banks. Using the framebuffers with the transitions means accepting certain limitations. If one of your sources is live video and the other source is an image in one of the two framebuffers (which one doesn't matter), any TDE that features moving the entire image or compressing it in any fashion becomes a simple wipe that resembles the selected move. For the *Toaster* to be able to move a live video

source, it needs both framebuffers to get the job done. Tying up one of them with an image from storage, freezing, or the character generator will preclude those nifty moves and compressions.

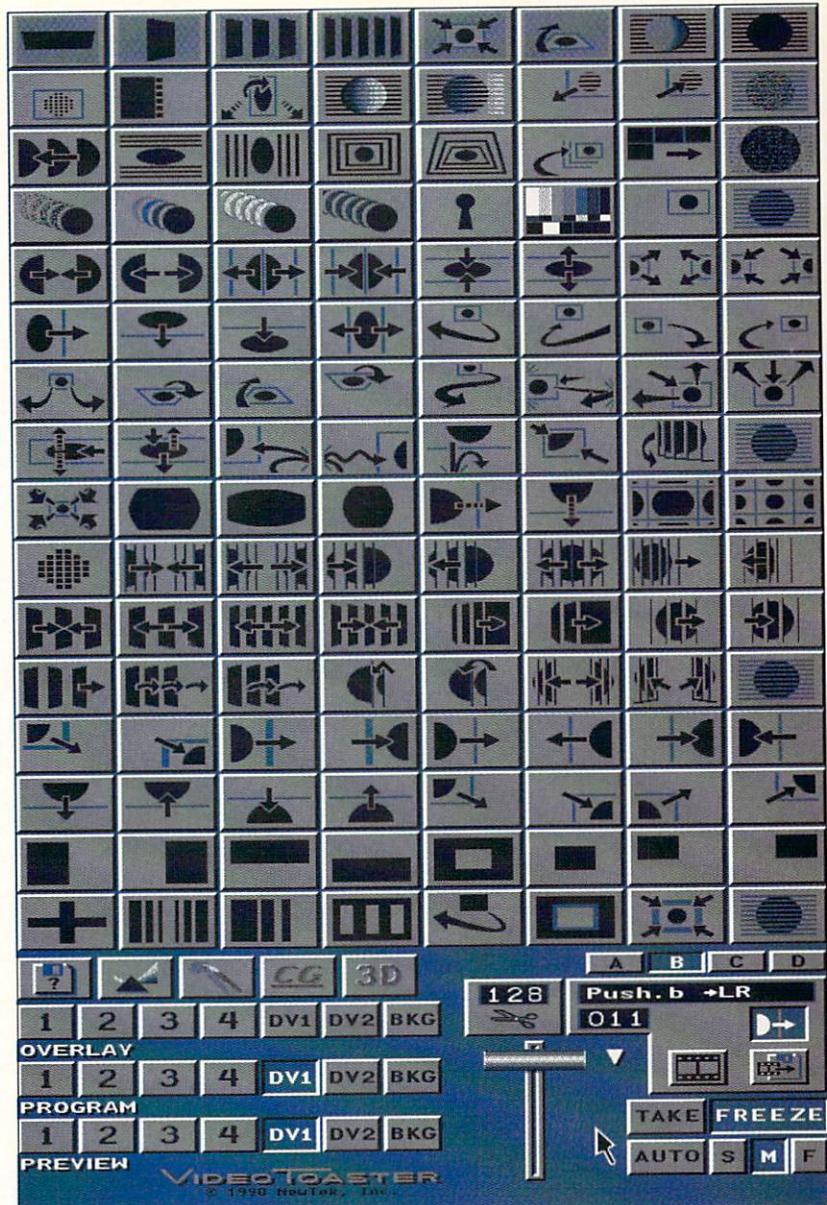
Using the framebuffers for images shows another problem that you may or may not see. If you look at the extreme right-hand edge of any images loaded into the framebuffer you'll see a streak of lines or color. NewTekkies refer to this as "the Zipper." It is a result of a decision made by the programmers which ultimately resulted in faster loading of images into the buffers. Unfortunately, a number of *Toaster* users have been noticing the Zipper and have complained. In almost all cases those individuals have been video professionals with access to professional monitors that have minimal overscanning, making the problem viewable. Most *Toaster* owners have never seen the effect simply because of the monitors they use. NewTek says they may rewrite the software to eliminate the Zipper but warns that the framebuffers will load images somewhat slower.

The Freeze feature of the *Toaster* also has its limitations but nothing you can't usually work around. As many of you may already know, a video frame is comprised of two fields of video. This supposedly contains the entire picture. In actuality it takes two frames of video to hold all the color phasing information. This is referred to as a "color frame." Many video devices therefore need two complete frames of video to be able to do their job. The Freeze feature of the *Toaster* is one of them. At 1/30 of a second per frame, you can see that the *Toaster* needs about 1/15th of a second of video when freezing video. A lot usually happens in a fifteenth of a second and using this feature will immediately confirm that.

The Freeze feature will often give you a moving, strobing image. To eliminate this, the *Toaster* has a button which will average all images together to make one non-moving image. This approach is okay as long as the averaged image doesn't differ too much from what you intended to grab in the first place. This feature can also reduce the clarity of the original image. And the button that engages this feature is not on the Switcher screen where it belongs. To use it you'll need to flick back to the *Toaster*'s preferences screen.

While we're speaking of using the Switcher interface, let's mention that the T-bar is really only there for looks. Any attempts to grab the T-bar and drag it will result in mucho frustration. A director will throw the mouse across the room after a few failed attempts during a live production. Fortunately a better method is included: simply press the right mousebutton and pull the mouse back to engage and control the TDE. This works regardless of where the mouse happens to be on the screen at the time.

Don't forget that the *Toaster* has a keyboard key equivalent for every button shown on the screen. When pressed for time, remember that you can hit the spacebar to activate the Auto transition feature. Or hit Return to do a quick cut to the next source.



128 *Toaster* Digital Effects, assembled from the four separate control screens.

Press S, M, or F to change the transition speed. Select sources by the proper keys. To make using them simpler, the keys are assigned much in the same order of the buttons on the screen. Changing to another effect is simple; type the letter of the bank of effects you need, use the keypad to type in its number, and then hit ENTER on the keypad.

The *Toaster* is a complicated piece of video gear and it's not my job to tell you everything that can be done with it. That's for the manual. What I hope I can do is give you some tips on what to watch out for and what to try. If you have any *Toaster*-related video questions please feel free to send them to me in care of *.info*. I'll gather them up and we'll try to answer them in as much detail as space permits.

## Video Toaster

Newtek

215 E. 8th Street

Topeka, KS

66603

913-354-1146



# MINIX v1.5 Operating System

**T**hink of *MINIX* as a sort of "Mini UNIX"; that is, after all, what the name stands for. It exists for a couple of pretty good reasons. First and foremost, UNIX itself is copyrighted and strictly licensed by AT&T. They don't release the source code, and you can't customize it. This goes against the grain of those computer users who still subscribe to the old "Hacker Ethic"; that is, that information should be shared freely. *MINIX* is distributed with the source code (in C) so that it can be customized and recompiled, then re-customized and re-compiled, ad infinitum. The second reason *MINIX* exists is that UNIX is a huge beast that requires multi-megabytes of RAM and massive hard drive storage space to run properly, and it gets to be a real hog when you start multitasking or adding multiple users. *MINIX* is designed to run on small systems - for example, a 512K Amiga 500 with a single floppy drive. (Of course, expansion RAM is recommended.)

An operating system is a huge and complex thing, and obviously I can't do an in-depth review of one in a single page. I won't even try. But I can tell you a few of the most important things you need to know about *MINIX*.

The first is that you don't need it. Not unless you are a hard-nosed, dyed-in-the-wool hacker. *MINIX* was made for hackers. It comes on nine disks, only one of which is in AmigaDOS format (The rest are in a special *MINIX* format.) The first thing you have to do is make a set of working disks from the disks supplied. The instructions for doing so in the manual aren't correct, and you have to figure out how it's really done all by yourself. I eventually got a set working, though I had to work around a read/write error that occurred in the same spot on *both* sets of disks Prentice-Hall sent me.

*MINIX* commands are UNIX-like, which means they are cryptic and difficult and make perfect sense to programmers, but not to the rest of humanity. This is no fault of *MINIX*, it is just the way UNIX is. But it does constitute one more reason why *MINIX* is not for the casual user.

Most of the disks contain source code for the *MINIX* system itself, so you can rewrite it to suit yourself. Needless to say, unless you feel comfortable rewriting operating systems, this capability will be of little use to you. You also need to be able to find or write applications in C and recompile them under *MINIX* before you'll be able to do much useful work.

However, *MINIX* does come with a fairly complete set of UNIX-style commands and utilities - such as *BAWK*, *KERMIT*, *ELVIS*, and *NROFF* - that will be immediately familiar to UNIX users.

By now I assume we've trimmed the crowd down to those who know and love UNIX, feel comfortable around complex commands, and like to write and recompile C code. How does *MINIX* stack up for you super-users?

Well, this is the first release of *MINIX* for the Amiga, and there are some bugs. This is inevitable. Prentice-Hall is committed to supporting *MINIX* and I assume there's nothing that will pop up that they won't eventually fix. And, since you are given the source to everything, there is no reason you can't fix them yourself, anyway. I assume you'll be up on USENET, so you can plug into the comp.os.minix conference and share information with fellow *MINIX* users. Besides trading bug reports, this is also the best place to get source code to recompile. You'll also want to check out the Mars Hotel BBS, a major source of *MINIX* information, at 301-277-9408 (free).

The *MINIX* manual is good, with the Mac, ST, and PC docs included along with the Amiga's in the same 680-page binder. But the UNIX docs fill a shelf, and I suppose the *MINIX* docs could, too, theoretically. In addition to the online support, there is also an additional book available from Prentice-Hall: *Operating Systems: Design and Implementation*, by Andrew S. Tanenbaum.

*MINIX* runs on a minimal system, so it is perfect for hackers on a budget. At \$169, it is certainly much cheaper than buying an entire A3000UX system! However, *MINIX* for the Amiga is currently hobbled by one major flaw not experienced by the Macintosh, IBM/PC, or even Atari ST versions of this operating system: lack of hard drive support. Though *MINIX* will run on a floppy-based system, it is highly disk-intensive, and good hard drive support is really a must-have. Until Prentice-Hall (or some enterprising user) upgrades the Amiga version with hard drive support, its utility will be severely limited, even for the most dedicated of hackers. Of course, you can always roll your own driver. If you're using *MINIX*, that shouldn't be a very difficult task for you.

It is great to see products of this importance being made available for the Amiga platform, and we will be cheerleading Prentice-Hall as they continue to improve and upgrade *MINIX*.

## MINIX v1.5

\$169.00

Prentice-Hall

Englewood

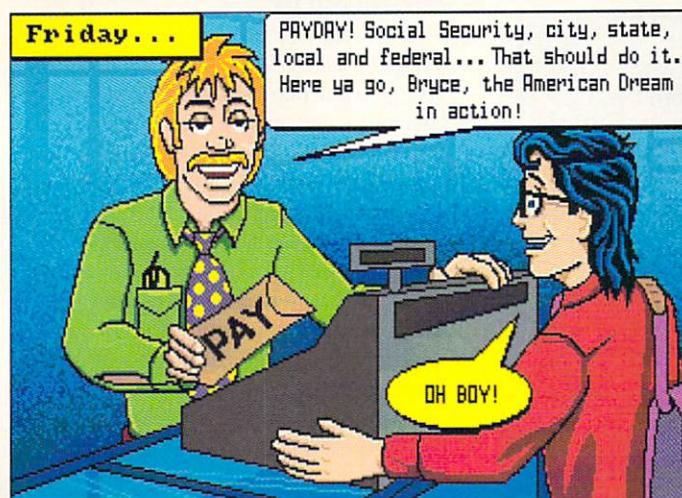
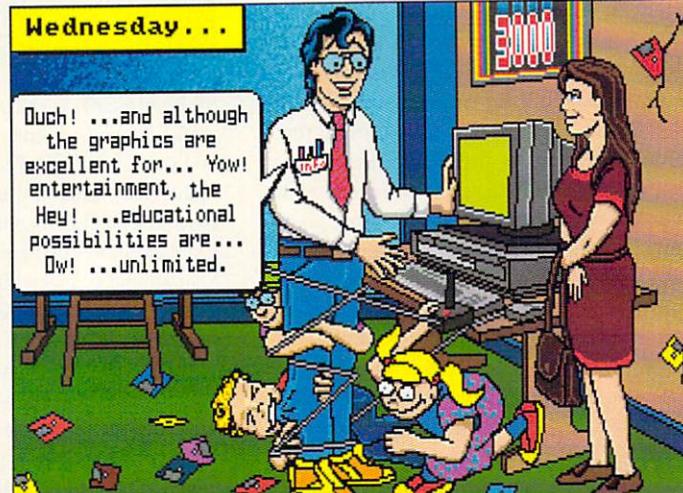
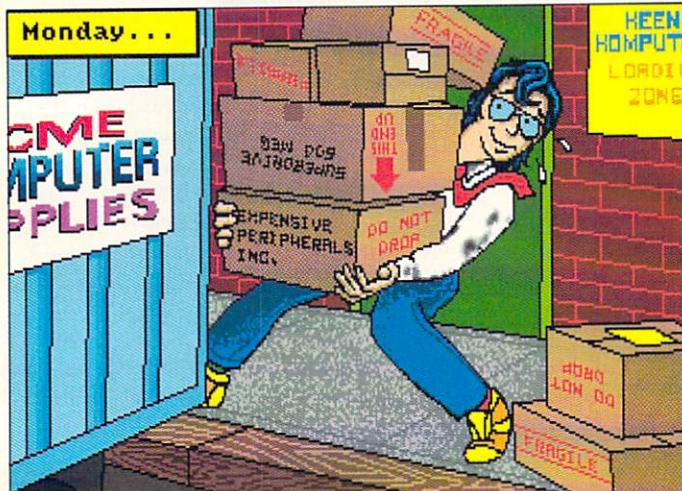
Cliffs, NJ 07632

201-592-2000



# BRYCE

ART & CONTINUITY: GREGORY CONLEY



Gregory Conley can be contacted by writing: Gregory Conley, 17320 Laverne Avenue, Cleveland, Ohio 44135

# CyberPlay

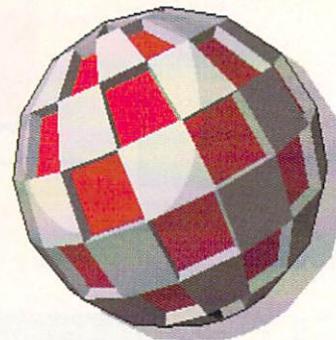
Incredible  
★★★★★

Very Good  
★★★★

Average  
★★★

Awful  
★★

Drek  
★



## The State of Games

by Tom Malcom

One of the things I've been noticing lately is how many Nintendo-like games have been coming out for the Amiga, and how many of them I've been spending far too much time playing. Working at *.info* is a lot like being in school: I have to have reviews written on time, and if I play games for too long, I don't get my homework done. I'm starting to understand why parents yell at their kids to turn off that damn Nintendo. I've been hooked on games before - more often than I like to think about - but this new obsession is making me give some thought to why some of these essentially one-note games are eating up so much of my time. You know the type I mean: you control a little character who runs and jumps around a series of sidescrolling screens, picks up objects (usually keys to get to the next level), and evades or shoots bad guys. The four I've been playing most lately are *Apprentice* (a Rainbow Arts game imported



*StormLord*, part of the *Arcade Fever Action Pak* from Spotlight/Cinemaware/EA.

by Innerprise), *Turrican* (also from Innerprise), *StormLord* (developed by Hewson and part of the *Arcade Fever Action Pak* released by Cinemaware under their Spotlight label and distributed by Electronic Arts - is that convoluted enough for you?), and *SpellBound* (released by Psygnosis on their Psyclapse label and the least successful of the lot).

Platform arcade games do all tend to play alike. Vivaldi has been criticized for writing the same concerto 500 times. To which the standard rebuttal is "yes, but what a concerto!" The same applies to these arcade

diversions. They may all be fundamentally the same, but the execution and variations are what make them worth playing. *StormLord* is a perfect example. The play differs very little from several NES titles with fairy tale settings, but the execution of this one is far beyond anything the NES is capable of. Add lush graphics and a wealth of exceptional mood-enhancing sound effects and you have something that Nintendoids can only envy. It's the difference between a fairy tale told by Ebenezer Scrooge and one by the Brothers Grimm.

### OBSESSION

What surprises me most about these games is that I get so obsessed with them. I've probably played the first three levels of *Apprentice* 500 times; if I don't do well through the first couple of levels, I'll restart the game to have a better chance of getting further. I have a feeling that arcade games of this type bring out the anal-retentive in me. Everything has to be done perfectly and if it's not, I'll go at it until I get it right; I don't get disgusted with the game, I get disgusted with myself. It may be repetitious, but it has much more to do with striving for perfection of performance. We hear a lot about the glassy-eyed stare Nintendo players have that scares their mothers. Well, Moms of America, it's not a trance at all, it's hard



*Apprentice*, an Innerprise import created by Rainbow Arts.

concentration. Do you know of anything else that can make a kid concentrate so intently? In fact, since I've been playing games like these, I find that I'm better able to focus myself on other things. Anything that can do that for me is beneficial in my book, given my usual attention span of about four seconds.

## A MATTER OF CONTROL

The one thing that these games have in common is that you make the character you control jump. Who thought this up, anyway? No one or thing has ever jumped like that in real life. While a joystick is considerably different from an NES controller, having a keyboard available for additional input offers many more possibilities. It's the ease of control, I think, that makes some NES-style games more successful than others. *SpellBound* is less fun to play than *StormLord* and *Apprentice* for precisely this reason. Jumping in *SpellBound* requires holding down the firebutton and pushing the stick up-left or up-right. I'm of the opinion that elaborate joystick controls indicate a lack of skill on the part of the designers and programmers. The game should be intelligent enough to know when certain movements are appropriate and when they're impossible, instead of requiring the player to remember and perform a complex series of movements in what is usually a frantic situation anyway. Joystick control should be no more complicated than up, down, right, and left. Firebuttons are for firing and they shouldn't be used as shift-keys.

As for how well I like the four games I've been obsessed with lately, I like *StormLord* the best (★★★★+), if only for the graphics and sound. I think the play could have used a little fine-tuning, and I've run across a couple of minor glitches in the programming. I also don't care much for having a time limit in a game where getting around depends largely on timing to avoid traps and enemies. The other game in the box with it, which makes for a fine value, is *Onslaught* (★★★+), a kind of medieval arcade wargame. It's not bad, but I found it very bloody and not terribly involving. *Apprentice* (★★★+) needs much better graphics, but its play is very good, which is only to be expected from the same company that did

## .infoMANIA GAME TIPS

*Here are some secret "side doors," "back doors," and strategies to your favorite Amiga games, discovered by .info readers.*

**Awesome:** Here are two strategy tips for Psygnosis' new space epic: On the platform mazes on some planets' surface, there are traps that consist of laser blasts, spikes, and other nasties that shoot out from the points along the edges of the ramp. Instead of dodging these projectiles, press your trooper against the wall and then run past. The traps will cease to fire and you will usually suffer no loss of energy. Also, it is not always wise to slug it out with the guardian creature at the end of the maze. If you can dodge the beast, or even run right through it, you will be able to enter the trading center more quickly.

Derek Godat,  
Terre Haute, IN

**Pioneer Plague:** When you're on a planet, shoot as many rockets as you can. When the rockets are ready to go off, just press Q and you'll be back on the ship. Then go to the planet. The rockets will still be there,

but the timer will have reset. If you do this on all the planets, you can't lose. This trick also works if you're about to die. Just press Q before you explode. When you go back down you'll be good as new.

Michael McInterney,  
New Preston, CT

**Drakken:** Whenever you press the F10 key all your characters will be resurrected with all their life and magic levels restored.

Joaquin Terrones,  
Mexico City, Mexico

**Falcon:** Press Ctrl-X any time while you are playing, and you will receive eight AIM-9L Sidewinder missiles automatically. You can use this as many times as you like. This will not add to the weight that you started with. This works with all ranks except the first one, First Lieutenant.

James Au,  
Preeceville, SK, Canada

*Share your "secret tricks" with .info readers or write and let us know which games you'd like to see hints for! Send to: .info Mania, 705 Highway 1 West, Iowa City, IA 52246.*

*Spherical*, one of my all-time favorites. I like *Turrican*'s (★★★★) look, and the play is fine, but I think it needs a little tighter focus. Some of the sections go on too long; jumping and turning up a series of platforms is fine, but in spots there are too many of them and it gets repetitious. The main difference of opinion I have with *SpellBound* (★★★+) is the control. It does offer some interesting variations on the theme, but the cooperative two-player mode is virtually required, and I regard NES-type games as essentially solitary pursuits.

If you've been looking for a good way to

eat up some idle hours, any of these will certainly do it for you. Nintendo-esque games are a driving force in the industry and we'll be seeing more and more of them.

## ADDRESSES

**Psygnosis**, 29 Saint Mary's Court, Brookline, MA 02146, 617-731-3553

**Interplay Productions**, 3710 S. Susan, Suite 10, Santa Ana, CA 92704, 714-545-9001

**Electronic Arts**, 1820 Gateway Drive, San Mateo, CA 94404, 415-571-7171



# CyberPlay

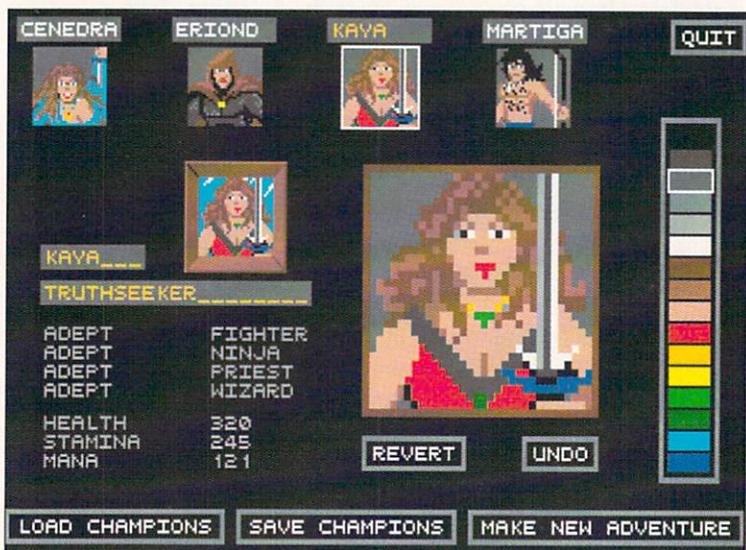
## CHAOS STRIKES BACK



FTL, 6160 Lusk Boulevard, Suite C-206  
San Diego, CA 92121, 619-453-5711



Yummy Barbequed Dragon steaks coming up!



Optimize the appearance of your alter ego He-Man the Barbarian (or She-Woman the Fierce) with the Character Editor.

I have been waiting for this sequel with bated breath so long I was gasping for air like an enchanted fish out of water long before it was finally released. Two years is a long time to hold your breath!

*Chaos Strikes Back* is the long awaited expansion set to *Dungeon Master*. Lord Chaos isn't really dead, he was only acting! Your services are once again required to tidy up the dungeon, eliminate Lord Chaos, and save the world once and for all (or until another expansion set comes along).

The packaging says that the original *Dungeon Master* game is required. What you need from the original is the manual which explains the plot and the symbols used in spell casting. It seems strange that FTL didn't just include this important info in *Chaos*. New characters can be created from within *Chaos* or, if you're fond of your *DM* heroes, you can transfer them from your original saved game disk. Since *Chaos* is a continuum of *DM*, not a new game, it starts out tough and gets progressively worse. *Chaos* is not a quest for weenies.

What set *Dungeon Master* helmed-head and armored-shoulders above other hit-points-and-dungeons type adventures was its transparent interface, which is retained unchanged in *Chaos*. Graphics and sound are also the same. *Chaos* looks and plays just like *DM*. At first I was disappointed that *Chaos* was so similar to *DM*. I had been hoping for something new and equally innovative. What I got was deja vu and a deeper, darker, twistier, multi-layered dungeon with meaner monsters and trickier puzzles. No longer state-of-the-art, but who's complaining?

There are two new additions; the Hint Oracle and the Character Editor. The Hint Oracle is context sensitive and will only give hints about the exact location of your saved game. Having to save and exit the game and then boot up the Utilities disk to get into the Oracle is time consuming and a pain but worth the effort if you're stuck. With the Character Editor you can alter the appearance of your champions. Only their appearance can be changed, however, not their attributes or their possessions.

If *Dungeon Master* isn't your cup of ogre punch and you were expecting a new game you'll be badly disappointed with *Chaos*. However, if the masochist in you wasn't satisfied with the first go-around in the Grey Lord's dungeon and yearns for more abuse, you'll love *Chaos Strikes Back*.

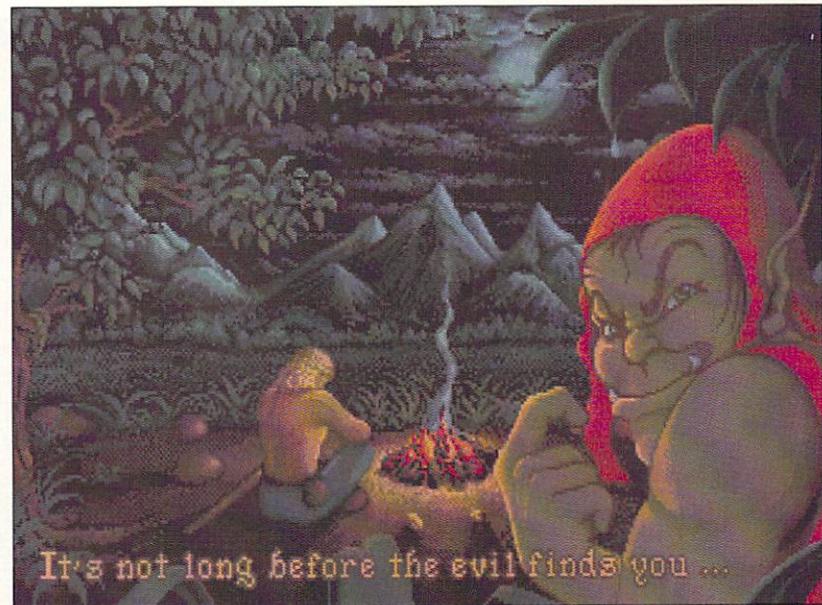
- Judith Kilbury-Cobb

I have to keep looking at the publisher's name on the box to make sure it's ReadySoft and not Psygnosis. *Wrath of the Demon* looks like *Beast*, plays like *Beast*, and, above all, sounds like *Beast*. It should, since the music was written by the same person who scored *Shadow of the Beast*.

*Wrath of the Demon* is a big arcade adventure and skillfully done. It has the usual rescue-the-princess and save-the-world fantasy plot, with lots of atmosphere and attention to detail. The intro is killer, the parallax scrolling is very fine, and the backgrounds pretty, though I occasionally thought the animations could have been just a hair better; for example, I think the horse in the first segment sometimes looks a little awkward. The play is difficult (the one thing I wish ReadySoft hadn't learned from Psygnosis), but not so difficult to be terminally frustrating. I must be getting used to being killed off.

Imitation is supposed to be the sincerest form of flattery, but somehow, I find *Wrath of the Demon* a little flat because of it. I would much rather see ReadySoft expend their resources on something more original.

- Tom Malcom



## WRATH OF THE DEMON

ReadySoft, 30 Wertheim Court, Unit 2  
Richmond Hill, ON, Canada L4B 1B9, 416-731-4175



## CARTHAGE

Psygnosis, 29 Saint Mary's Court  
Brookline, MA 02146, 617-731-3553



**C**arthage is an interesting, technologically groundbreaking mix of arcade racing and wargaming. Its schizophrenic personality takes a little getting used to, but once you do, the game is as spectacular as *Ben Hur* and as involving as a good chess game.

*Carthage* is set in the Second and Third Centuries B.C. during the Punic Wars, waged between the North African country and what was quickly becoming the all-powerful Roman Empire. Your role is to defend Carthage against the invading Roman armies. Resources must be carefully managed: tax rates adjusted, armies recruited, loyalties cemented, and the like. To do this, you travel from town to town in your chariot - the arcade sequences.

The wargame part of the game is played on fractally-drawn maps that are a wonder to behold. Simply clicking on an army's icon pops up a window with its vital statistics.

The only quibble I have with *Carthage* is that I'd like to be able to turn off the chariot-racing sequences and play it just as a wargame. Fine, innovative work from Psygnosis. - Tom Malcom

# CyberPlay

**A**ccolade has been pushing into the graphic adventure arena lately and with the release of *Elvira*, they've scored a monster [pun intended] hit. I was expecting a game as schlocky as the TV horror movie hostess it's named for, but it turned out to be one of the best of the genre.

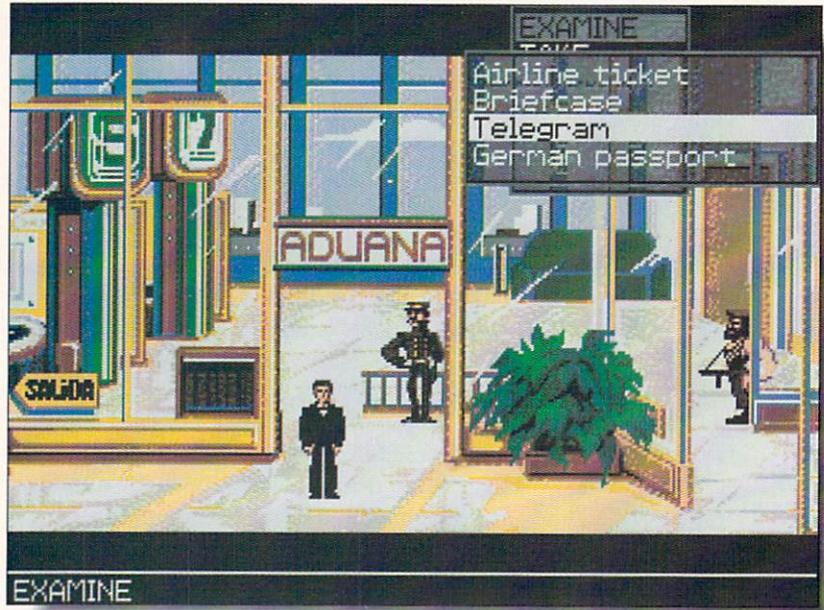
The plot has you trying to rescue *Elvira* from a castle populated with all sorts of evil supernatural entities, both by doing battle with them and by working magic spells (cooked up with *Elvira*'s help - handily, she's trapped in the kitchen). It's the artwork that really sets *Elvira* apart from other graphic adventures: it is absolutely beautiful. I particularly like the gardens outside the castle. The game's mechanics are very smooth and the play compelling enough to hold your interest until you finish it.

*Elvira* is an example of what celebrity-licensed games should be. *Elvira* herself is an integral part of it, and her daffy humor adds welcome relief from the more gruesome sections of the game. (True to horror-dom, there are some very bloody closeups.) *Elvira* is fun, funny, and a thorough delight. - Tom Malcom



## ELVIRA

Accolade, 550 South Winchester Boulevard  
San Jose, CA 95128, 408-985-1700



## JAMES BOND: THE STEALTH AFFAIR

Interplay Productions, 3710 S. Susan, Suite 10  
Santa Ana, CA 92704, 714-545-9001



**Y**our name is Bond. James Bond. If you've ever seen a Bond movie (or even heard about one) you know what that means! Suspense, action, espionage, international intrigue, exotic locations, and lots of girls. Your mission is to recover a super-secret Stealth Bomber aircraft stolen either by the Russian KGB, a Latin American dictator, or maybe organized crime. Using your nifty secret agent equipment to sift through puzzling clues to track down who took it (while dodging nasty assassins) is part of the fun. Nobody said the secret agent business was going to be easy.

*James Bond: The Stealth Affair* uses Interplay's unique 'Cinematique' game system first introduced in *Future Wars*. The system features a minimalist, totally mouse controlled user interface. Pop-up windows display commands, text, and graphics. The innovative interface is elegant in its simplicity and very easy to use. The stunning graphics are sharp, detailed, and complemented by first-rate sound and animation. No Bond fan should miss this one.

- Judith Kilbury-Cobb

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Available for Amiga, IBM and Atari ST computers.  
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SCREENS TAKEN FROM AMIGA & IBM VGA VERSIONS

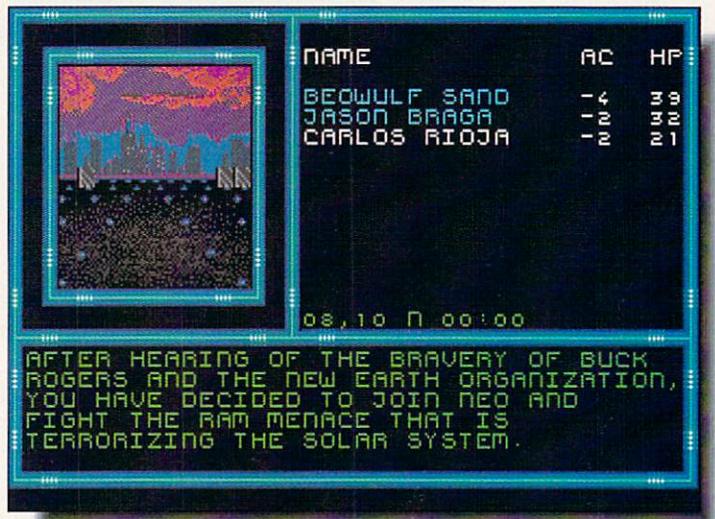
Commodore Amiga  
Requires 512K  
Color Monitor & Mouse required

Mastertronic

**VIRGIN MASTERTRONIC, INC.**  
18001 Cowan Street,  
Suite A, Irvine, CA 92714  
714-833-8710

Circle #131 on the Reader Service Card

# CyberPlay



## BUCK ROGERS

SSI/EA, 1820 Gateway Drive  
San Mateo, CA 94404, 415-571-7171



Taking the graphic adventure back down to the bottom rung of the evolutionary ladder, *Buck Rogers* looks more like a mediocre PD effort than a commercial release. The graphics are crude, the sound not much better, and the animation, if you can call moving a character space by space like a checker animation, distractingly bad. SSI obviously spent too much on the license to have anything left over for developing a decent game. I've been a Buck Rogers fan since I was a kid, but Buck himself would be appalled at what's been done to him.

- TM



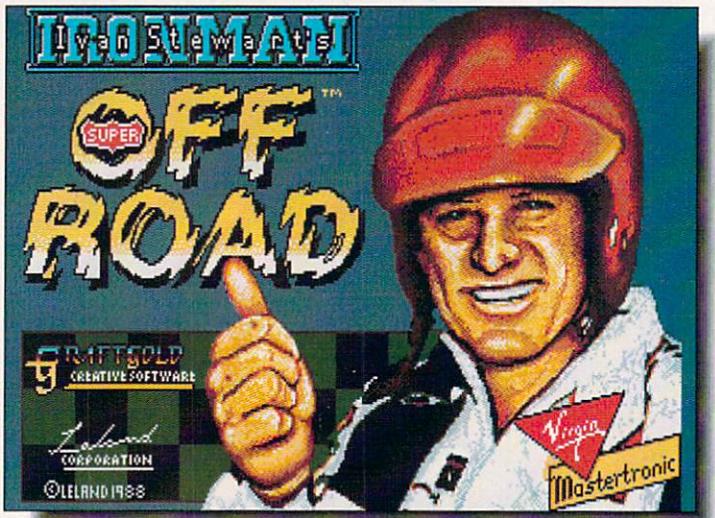
## HARPOON

Three Sixty, 2105 S. Bascom Avenue, Suite 290  
Campbell, CA 95008, 408-879-9144



Good thing for the Soviets that relations between East and West have warmed up considerably - with very many combat simulations as realistic as *Harpoon* in the hands of civilians, the Reds wouldn't stand a chance. The wealth of tactical and strategic data on weapons, ships, subs, etc., is overwhelming. (Tom Clancy used it extensively while writing his novel, *Hunt For Red October*.) Unfortunately, gameplay is unbearably sluggish on a bare-bones Amiga. Playing from RAM disk is definitely recommended. Long on realism and detail, somewhat short on playability.

- JKC



## SUPER OFF ROAD

Virgin/Mastertronic, 18001 Cowan  
Irvine, CA 92714, 714-833-8710



I made a special trip to the video arcade to play the coin-op original of this game, and while the Amiga version comes off fairly well, it isn't quite as much fun without the steering wheel of the arcade machine. Aside from that difference, the game is very well translated. It has you racing a 4-wheel drive truck around a muddy, hilly, pothole-ridden track (the whole track is visible onscreen at once, something I like very much) trying to win prize money to buy options for your truck. Entertaining, if not terribly deep.

- TM

# DOUBLE DARE YOU.

## Blue Max

### ACES OF THE GREAT WAR

#### WWI Air Combat Simulation

Take control of one of eight classic WWI fighters and find out how good you really are. Fly with the best—Richthofen, Fonck, Mannock, Rickenbacher—and learn their tricks and techniques.

- Action dogfight, solo, and team missions for one or two players using a single computer with any combination of keyboard, joystick, or mouse.
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How strong are your nerves at 2,000 feet, with an armed Fokker DR.I on your tail? Forget glory, friend. Think survival.



- VGA 256 3D COLOR GRAPHICS,
- ORIGINAL MUSIC,
- SOUND EFFECTS FOR GAME BLASTER, ADLIB SYNTHESIZER CARDS

## DAS BOOT

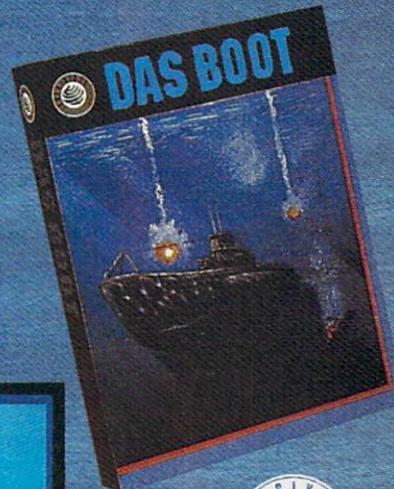
### GERMAN U-BOAT SIMULATION

Winter, 1941. The icy waters of the North Atlantic. The deeper you dive, the greater the pressure. Depth charges explode around you, banging on the hull of your U-boat like iron fists. Nerve and cunning make you the terror of the Allied convoys.

- 3D submarine warfare: For the first time, a sub warfare game lets you deal with threats below and above the surface in a true three dimensional environment.
- Real communications: Use the German Enigma coding machine to send and receive information.
- Many missions to choose from—into the North Atlantic and Arctic, inland along the coast of Norway, into the Bay of Biscay, and through the Straits of Gibraltar.
- 3 different levels of difficulty, from beginner to realistic.
- 3D graphics in 256 VGA colors, with multiple internal and external camera views in a complete 3D world.

Circle #102 on the Reader Service Card

Do you think well under pressure? How about 300 pounds per square inch of pressure? Take a deep breath, captain....



THREE-SIXTY PACIFIC, INC.  
2105 S. BASCOM AVE, STE. 380  
CAMPBELL, CA 95008  
408-879-9144

# CyberPlay



## DRAGON'S LAIR II: TIME WARP

★★★

ReadySoft, 30 Wertheim Court, Unit 2  
Richmond Hill, ON, Canada L4B 1B9, 416-731-4175

I know there are people who like these Don Bluth cartoon games, but I'm not one of them. The idea was fun the first time, and the animations are entertaining, but the play is hardly something that will keep you coming back. In fact, I haven't even made it through the second scene of this one; you have less than a second to get a glimpse of it before you're killed off. I think that's kind of rude. If you liked the other *Dragon's Lairs*, you'll probably like this one. Otherwise, give it a miss.

- TM

## FACES

★★★

Spectrum Holobyte Inc., 2061 Challenger Drive  
Alameda, CA 94501, 415-522-3584

Enough already. *Tetris* was a killer, *Welltris* was moderately amusing, *Faces* is a bore. If it had been the first of the series, I probably would have felt much different about it, but if I want to play a *Tetris* game, I'll play *Tetris*. This variation drops pairs of pieces of faces (I suppose that's how they came up with the catchy name) from the top of the screen and you have to maneuver them to fit together. It's all slickly done, with good graphics and fun music, but the slickness can't hide the fact that it's more marketing than game.

- TM

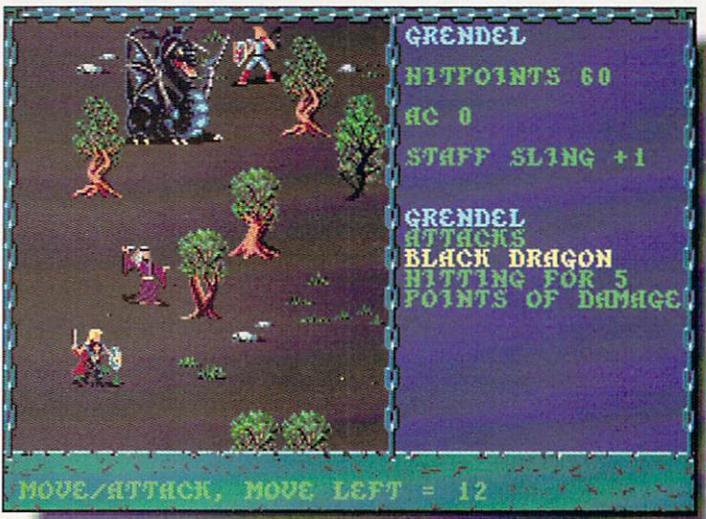
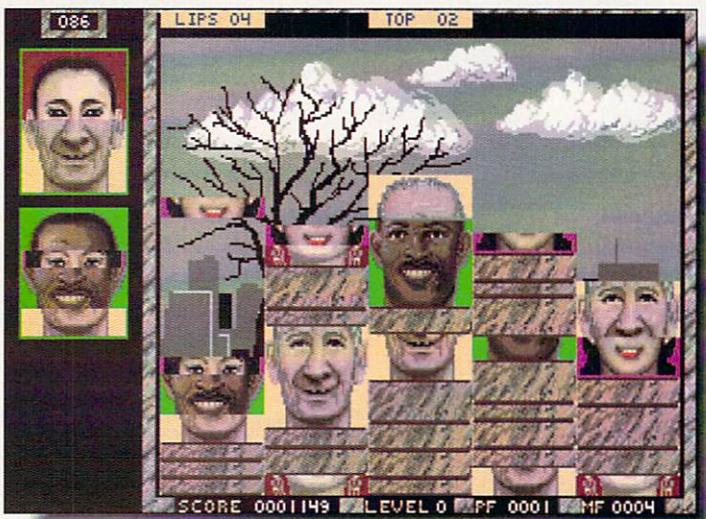
## CURSE OF THE AZURE BONDS

★★★

SSI/EA, 1820 Gateway Drive  
San Mateo, CA 94404, 415-571-7171

*Curse of the Azure Bonds* is the sequel to *Pool of Radiance* and third in the series of official AD&D role-playing adventures. After being ambushed while marching to Tilverton you find five blue marks on your arm which have the power to control your actions. New player types and spells are introduced and characters can be transferred from *Pool* or *Hillsfar*. Graphics and animation have been noticeably improved. Combat encounters are still emphasized but are made more manageable. *Azure Bonds* is the most playable AD&D game yet.

- JKC



# TACH 25

## Hardware Copier

Well, hardware disk copiers have made their debut on the Amiga, which is significant if you consider the Amiga's age. It took a very long time for such devices to appear for older 8-bit machines like the C64. The *Tach 25* is old technology newly applied to the Amiga, and is kin to the parallel disk copiers on the C64.

### HOW DOES IT WORK?

Theoretically, the *Tach 25* hardware disk copier electronically reproduces data on a floppy disk by making an exact duplicate of the data on the disk, including disk protection. If the duplicate is not exact, the copy fails to work. And this does happen, because *Tach 25* cannot copy 100% of all software. Table One lists some random products I tried and the results I got using an Amiga 500 and one external floppy drive (required). When used with my A2000 I had some strange results while using DF0: and DF2:, since the software failed to recognize DF1:.

The *Tach 25* itself consists of two hardware pieces connected by a cable. One portion plugs into the parallel port while the other plugs into the external drive slot, with a pass-thru for the external drive. This was why DF1: was not recognized in my A2000, since the interface must connect to the drive being used. [However, a new A2000 internal version of this product is now available. -Ed.]

### A TACH 25 CLONE

A *Tach 25* clone is produced by Coast to Coast Technologies (CCT) and is sold as the *Synchro Express* by CCT for \$69.95. The Datel package is slightly different from the *Synchro Express* package only in that it also includes a Burst Nibbler program and something called Smart Copy, both on disk, for a total price of \$89.95. For \$20.00 more you get a couple of useful copiers, making the Datel package a 3-in-1 deal. These bonuses prove useful in copying certain software products when used with *Tach 25*, and are available separately for \$34.95 if you already own a *Tach 25* or *Synchro Express*. Otherwise, the two products are virtually identical.

SOFTWARE TITLE	VENDOR	COPIED?	NOTE
Earl Weaver Baseball	Electronic Arts	YES	
Arkanoid	Discovery	NO	1
Power Styx	Digitek	YES	
Solitaire Royale	Spectrum Holobyte	YES	
Shanghai	Activision	YES	
DataStorm	Bethesda Softworks	NO	1
Menace	Psygnosis	NO	2
Blood Money	Psygnosis	YES	

#### NOTES:

- 1) I estimated that this product uses non-standard tracks that are longer than normal. Burst Nibbler is supposed to allow *TACH 25* to copy these, but it would not.
- 2) Copy ran only in a "demo-like" fashion. Hitting a mousebutton caused unpredictable results.

.info does not endorse the illegal distribution of copyrighted software! Copies should be made only by legitimate owners of purchased software. Any other copying or distribution of copyrighted software is a federal crime!

### COMPARING TACH 25 TO SOFTWARE COPIERS

Software disk copiers have one important advantage over the *Tach 25*: parameters. Parameters normally remove protection from a software product so that it can be copied using the standard AmigaDOS diskcopy. After applying a parameter, the Amiga user can sometimes install the unprotected software on hard disk. This is not possible with *Tach 25* since its function is to duplicate protection, not remove it. Parameter copiers have a definite advantage over hardware copiers in my opinion.

### ADVERTISING

Advertising for *Synchro Express* was really designed to impress. It's too bad that the product falls so far short of its goal to copy "ALL the latest Blockbusters and utilities!!" and leaves an unhappy impression on the user. Maybe that's why it does not come with a list of copyable products. It makes you wonder just how many programs they tested this copier on. Five? Maybe ten? Their ad asks: "100% success?" They don't provide the answer, but I will: "No! Not even close!"

### CONCLUSIONS

Hardware disk copiers are interesting devices that work to a degree, but these two deliver nowhere near the implied or expected results. They don't work any better than non-hardware disk copiers and are more expensive. Like any copier, they don't copy 100% of all software. Of course what cannot be copied today will be copied tomorrow. This race of copier vs. protection is getting kind of old. Hopefully I'll live to see a day when no disk is copy protected.

### TACH 25

\$89.95



Rio/Datel

3430 E. Tropicana Ave. #67  
Las Vegas, NV 89121 800-782-9110

### SYNCHRO EXPRESS

\$69.99

Coast to Coast Technologies  
1855 W. State Road 434 Suite 208  
Longwood, FL 32750 407-767-0779

# Jim Meyer on Productivity

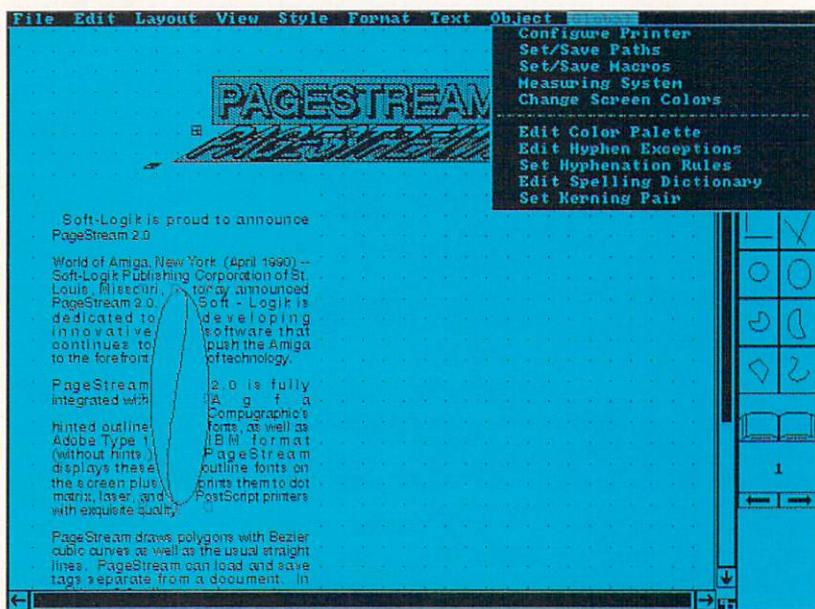


Figure 1. PageStream, showing pull-downs and text flow around an ellipse.

Again  
eyeballing  
DTP,  
Jim examines  
the latest  
incarnation of  
PageStream.

I was looking forward to version 2.0 of *PageStream*. This program has always promised a lot to its users. Unfortunately, it has also asked a lot. Early users had to pick and choose their way through the problems and had to have a full charge of patience to produce a usable document. The last upgrade of *PageStream* was described in these pages as "a much more docile beast." Now, with 68 new pages for the manual and a host of new features, *PageStream* may have become even more docile, but there's still some beast left. The first thing you notice about *PageStream* is how slowly it renders text. Because it uses outline fonts, *PageStream* gives you the best possible on-screen representation of your page. Unfortunately, outline fonts render slowly. How slow? This sentence took 32 seconds to render after I had typed it: "Now is the time for all good men to come to the aid of their party." It doesn't help matters that *PageStream* must get information for each character from its font files. You'll notice a lot of disk access while text is rendering. It does speed up somewhat after the first paragraph, though. This problem, which is shared by other programs which use outline fonts, may be diminished when the Amiga finally gets system support for outline fonts. Commodore has promised

this in a "future" OS release.

My introduction to *PageStream* was not a pleasant one. The lack of speed was frustrating, and the release I was sent had a faulty printer driver. A call to Soft-Logik's technical support number straightened out that problem, though. A fixed driver was available on the Soft-Logik bulletin board, and - thanks to my trusty modem - I was soon up and running. I was also initially frustrated by the way *PageStream* gets its font information. Floppy-based users will learn quickly to keep both font disks in the drives, as font information is divided between these disks. Otherwise, be prepared to swap disks often.

Enough bad news, at least for now. The strength of *PageStream* has always been its ability to manipulate text and objects, and the addition of bezier curves to the object drawing section enhances the power of *PageStream* even further. Bezier curves are now a part of the polygon tool. You start by defining the start and endpoints, and then specify one midpoint for the curve. After the curve is drawn, you can go into reshape mode, where you are given two control points for the curve. There's a hidden "gotcha!" though. If you don't end a curve properly - by clicking at the endpoint - you will be left with a "non-object" which cannot be manipulated or deleted. Objects, by the way, can be manipulated - sized, placed, rotated - with great precision if you use the requesters. These allow you to make rotations as fine as 1/100th of a degree, and movements as fine as 1/10,000th of an inch. (I couldn't verify that, of course, but it was the smallest change that *PageStream* would accept.)

I've already mentioned the slow speed of on-screen text rendering. The best way to avoid this (and, in my opinion, the best way to use a desktop publishing program) is to import text from an external wordprocessor. Thankfully, *PageStream* will import text created with *ProWrite*, *Scribble*, *Excellence*, *WordPerfect* and *1st Word*, as well as ASCII and IFF FTXT. Importing text is much faster than typing it in, and is quite a bit easier on the fingers. You'll also find that some fonts render faster than others. *PageStream* will also import graphics, of course. This release allows you to import a bewildering array of graphics, including IFF, IMG, TIFF, MacPaint, Degas, NEO, and TNY. Structured graphics in *ProVector*, *Metafile*, and *Aegis Draw* format can be imported, as can be Encapsulated PostScript (EPS) files.

The bells and whistles of *PageStream* - like the ability to rotate objects - are enhanced even further by

its macro capability. Macros give you the ability to carry out operations involving as many as 256 keystrokes by pressing a function key. I wish that *PageStream* had devoted a little more space to macros in the manual. There are wonderful examples of macro usage in the manual which are, unfortunately, written with the old *PageStream* keystrokes. These have been changed, and the macro examples given no longer work. With a little thumbing through the manual, as well as trial-and-error, I was able to duplicate the examples.

*PageStream* boasts the ability to flow text around objects, and gives you four ways to do it. Although you can flow text around irregular objects, such as ellipses, you cannot flow text around "polylines." (Polylines are multi-angled line segments created with the polygon tool.) This limitation applies to bezier curves, as well, but there is a way around it. You can create a closed object by first creating a bezier curve and then continuing the line to connect the two ends of the curve. One word of warning about flow, though. After I had placed a bezier object in my column, I created another column to catch the overflow text. When the screen refreshed, my text suddenly slipped halfway down both columns. No matter what I did, the text stubbornly refused to begin at the top of either column. I finally had to delete both columns and start again from scratch. One more reminder to save early and often!

The object drawing tools included with *PageStream* are superb, and - with the addition of bezier curves - allow you to draw a full range of objects, and "reshape mode" allows you to further manipulate your objects. The object tools, combined with the flexibility of the flow options, make it easy to create "designer" text. Text, of course, is one of the areas where *PageStream* truly shines. *PageStream* offers 13 different text styles, including mirror, shadow, and even upside down. You can add color to your characters, or you can fill them with different patterns. The characters you use are available in the size you want, not the size the program thinks you need, and you can set both the horizontal and vertical sizes of characters.

*PageStream* is arguably the desktop publisher of choice for the dot-matrix crowd. The quality of print *PageStream* gives you on a dot-matrix is as good as it gets. Period. For those of us who are still saving our nickels and dimes for that sexy 300 dpi laser printer, *PageStream* gives us a way to get the most out of what we have, and it helps take the sting out of waiting. *PageStream* has a driver for just about every popular printer out there, so it's likely that whatever printer you have, *PageStream* supports it. I counted 54 printer drivers (after I deleted something that looked like an Atari driver...) and I'm told that there are more in the works.

Although *PageStream* gives you outstanding results with dot-matrix printers, these electro-mechanical pin pushers are still not in the same league as laser printers, let alone PostScript-capable printers. For those folks in the higher tax brackets, *PageStream*

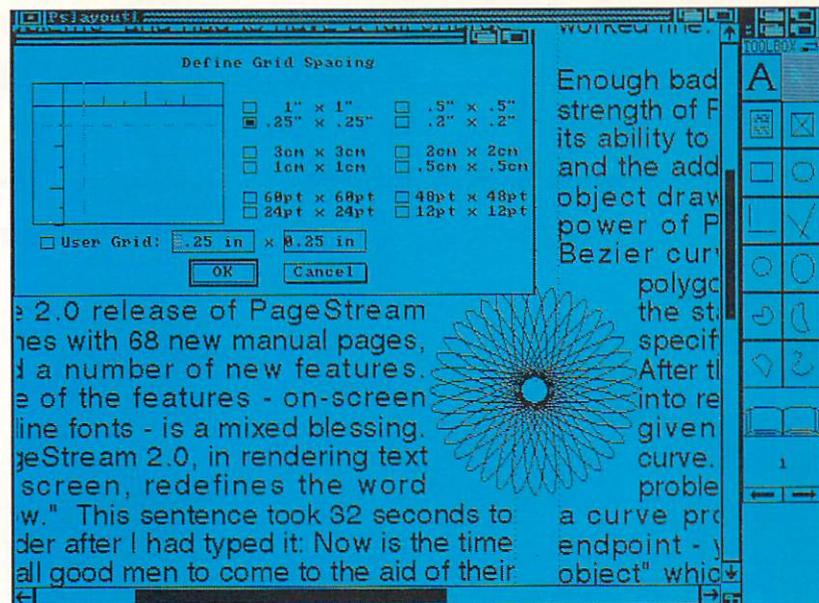


Figure 2. Grid spacing requester, with the screen at a higher level of magnification.

speaks both HP laser and PostScript, color and black-and-white. You can print directly to PostScript printers or to disk. *PageStream* 2.0 supports Adobe fonts, both type I and III, and Agfa Compugraphic fonts. Need more fonts? The manual lists two full pages worth of fonts available from various companies. You can also find additional fonts on the Soft-Logik BBS.

I've barely scratched the surface of the many features of *PageStream*. If you're more than a casual DTP user, you'll find the "tag" feature to be indispensable. Tags allow you to create a style for a document, and save it. This allows you to define certain types of text - introductory paragraphs, for example - and assign them their own typeface, font size, etc. You then "tag" a certain portion of text, and *PageStream* sets it up according to your definition. This approach saves you the trouble of manually highlighting each section and setting its attributes, and gives your documents a more consistent look.

*PageStream* is one of those programs that grows on you. That probably explains its popularity, despite the flaws of the early releases. There are still a few rough edges left, a few mine fields that you'll learn to walk around, but *PageStream* is an outstanding tool, particularly at its price. *PageStream* lacks a few features, like shadowed objects and drop caps, but it almost always gives you a way to accomplish whatever you want. You may gain a few grey hairs when you use *PageStream*, but you'll like the results.

Despite the threat of grey hairs (I'll dye it), and armed with a mine detector, this article was slowly and carefully produced using *PageStream* V2.0 and set to film via a Compugraphic system. I always wanted to be a redhead.

- Megan Ward, .info Art & Production Manager

## PageStream 2.0

\*\*\* +

\$299.00

Soft-Logik

11131 S. Towne

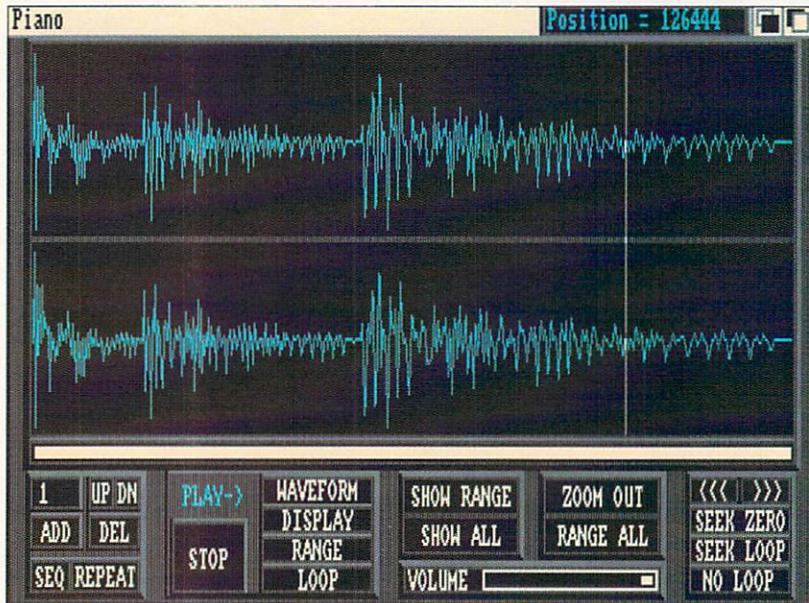
Square, Suite F

St. Louis, MO

63129

314-894-8608

# Peggy Herrington on Music & Sound



The latest incarnation of Aegis *AudioMaster*, version III.

Peggy takes a  
brief look at  
three new Amiga  
music products.

When it comes to tooting its own horn, the Amiga makes two types of sounds: sampled and synthesized. Used as individual musical instruments, these sounds are indistinguishable from each other (by most people anyway), samples being digital reproductions of real-world sounds, while synthesized instruments are constructed numerically from complex computations. Once you move away from music instruments, however, there's a big difference between the two. Sampled sounds can be much larger and more complex than those produced by synthesis. They are responsible for certain music sounding as though more than four instruments are playing simultaneously despite the fact that the Amiga has only four hardware sound channels.

Two new commercial packages - each intended primarily for the creation and manipulation of one of these types of sounds - have recently become available for the Amiga: *AudioMaster III* from OXXI and *E-Z FM Synthesizer* from The Other Guys. And both are sure to become leaders of their respective packs.

## AUDIOMASTER III

Like its previous incarnations, *AudioMaster III* became my program of choice for working with sam-

pled sounds the moment I used it - and I've used 'em all. While it does not provide the hardware necessary for sampling, it works with all sampling devices that connect either to the Amiga's parallel or joystick ports. I use it with SunRize Industries' *Perfect Sound* stereo hardware, adjusting the incoming sound levels with *AudioMaster III*'s handy software Oscilloscope.

*AudioMaster III*'s strength lies in its power to edit and tweak sampled sounds once you have them in computer memory. Some of the things you can do with it are downright astounding.

Then too, *AudioMaster III* can make the most amazing samples, and not just of sounds intended to be used as instruments in music composition programs. If you have expansion RAM for instance, you can make two- to three-minute long digital "recordings" of real world music complete with vocals, which you can store on disk and play back using (among other things) *AudioMaster*'s clever, free-standing CD player-emulator program. Because these longer samples are 8-bit sounds, they have an AM, portable radio quality about them - certainly not 12- or 16-bit quality you get from true CD - but used properly, they are nonetheless satisfying to most Amiga users, and can be wonderfully startling to the uninitiated.

As a sampling workhorse, *AudioMaster III* offers a stable of features. You can retune samples to any pitch; add echo, flanging, or make a chorus from your own voice; find multiple loop points and repeat duplicate sounds in a single sample, thereby substantially reducing its size; automatically resample a sound (an internal process) which can also dramatically reduce its size without destroying its quality. *AudioMaster III* saves up to five-octave instruments in either IFF or *Sonix* file format, and will let you search through Amiga memory for sounds - you can even hear what a hi-res graphics screen sounds like. You can also make "backtracks," single samples containing more than one instrument sound (drums, for example) and play them in music composition programs like *Deluxe Music Construction Set* and *Sonix*, using other "normal" instruments right along with them.

All this and more is explained in *AudioMaster III*'s in-depth manual, which even has an index. In short, whether you want to have a heckuva good time playing around with sampled sounds or you're digitizing tracks for a commercial game, I recommend this product unequivocally.

## E-Z FM SYNTHESIZER

It might not look as flashy as *AudioMaster III*, but *E-Z FM Synthesizer* from The Other Guys is easily as

fun and functional - and it makes absolutely great synthesized instruments which you can use in Amiga music composition programs, export to 16-bit sampling keyboards, or play with The Other Guys freely-distributable AIFF-compatible SMUS-player.

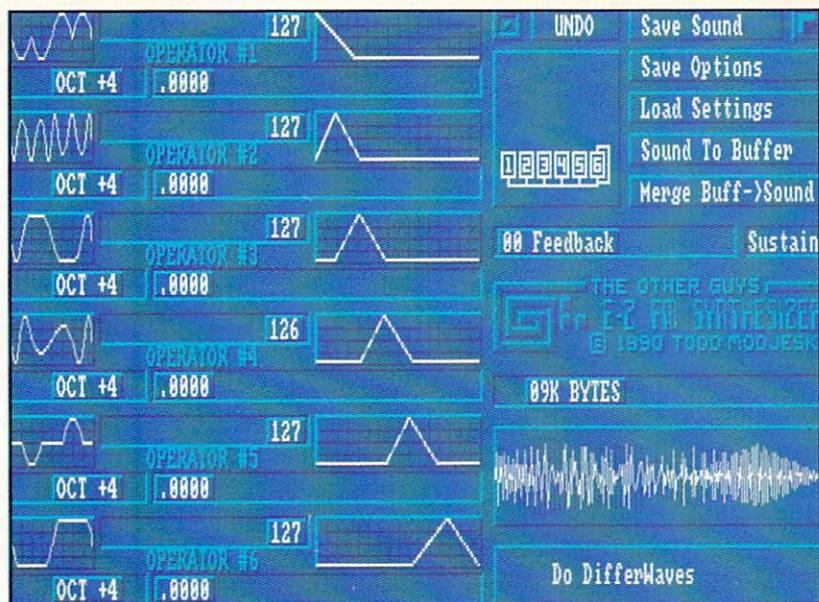
In order to synthesize an instrument with *E-Z FM Synthesizer*, you first load in one of the 83 supplied "settings" (not counting the nine finished examples) that comes with it. Choose from everything from church bells to funky space sounds to strings, and that's when the fun starts. You control 32 different algorithms via six independent operators for an instrument, each with its own waveform, envelope, and octave gadget. You have complete control over a sound's amplitude, frequency, and timbre, and can switch easily among sine, sawtooth, etc., waveforms for each operator with a click of the mousebutton - or design your own. Feedback loops among the six operators, Undo and Sustain are readily available, and the amazing part of this whole business is that with just a little experience, it actually begins to make sense! Plus you can swap a sound to the buffer, then load in another and merge them, hearing the result (as with all of these different procedures) by playing in four voices on the Amiga's QWERTY keyboard in over two octaves.

Perhaps the neatest feature about *E-Z FM Synthesizer*, however, is that it saves all these spiffy sounds in several different 8- or 16-bit file formats. 8-bit formats include one and three-octave IFF (the most common Amiga format), and the latter offers either 8-bit or superior 16-bit AIFF instrument sounds. 16-bit AIFF sounds can be successfully exported to sampling keyboards. To my knowledge, there is no music composition program on the market today that will handle AIFF sounds produced by the Amiga. However, you can hear it play these delightful 16-bit AIFF instruments by virtue of substituting them for IFF instruments in standard SMUS music data files, using the freely-distributable utilities and SMUS-player program from The Other Guys, which are available from them for a small handling fee, and were recently released on the commercial networks and by Fred Fish. (See my column in *info* #34, November 1990 for details.)

Just don't let this jargon about algorithms and file formats lead you to believe that *E-Z FM Synthesizer* is another one of those overwhelmingly techie synthesis programs. It's not. I found it amazingly intuitive with just a little practice, and even if you don't want to bother to figure out what you're doing, you can make such fantastic instruments so quickly and easily you'll never get bored.

## ALL IN ONE "MUSIC"

Amiga 500s were bundled with software called *Gold Disk's All In One* a while back. Now available separately, *All In One* consists of a couple of games and three introductory-level productivity programs, one of which is for music composition. Written by Chris Moulis, "Music" as it is called, is a simple note editor with four-channel MIDI in/out capability.



*E-Z FM Synthesizer* from The Other Guys.

Although exceedingly more limited, on the surface this program is something like a cross between Activision's *Music Studio* (the first Amiga music program released for the machine back in 1986) and Aegis' *Sonix*.

*Gold Disk's "Music"* lets you enter notes for four musical voices on a grand staff using the mouse (rather like *Sonix*). Each voice is color coded (like *Music Studio*) to correspond to one of the four IFF instruments you can have for each song. You determine these four instruments along with the song's overall tempo, amplitude, time, and key signature at the beginning of each score, and live with them throughout it. Although it plays both standard SMUS and MIDI data files, in order to play them properly these files must contain no more than four musical lines and four instruments - and not many that I've ever seen are that limited. "Music" handles triplets but all of the tied notes thumped annoyingly during playback on my A2000, and on paper (due to the absence of color) notes and rests in "Music" scores pile indistinguishably on top of each other. *All In One* was billed as introductory software when shipped with A500s, but it doesn't say that on the box they arrived in at my house. In summary, when you see *All In One* on your dealer's shelf, you don't have to wonder if the music portion of it offers much.

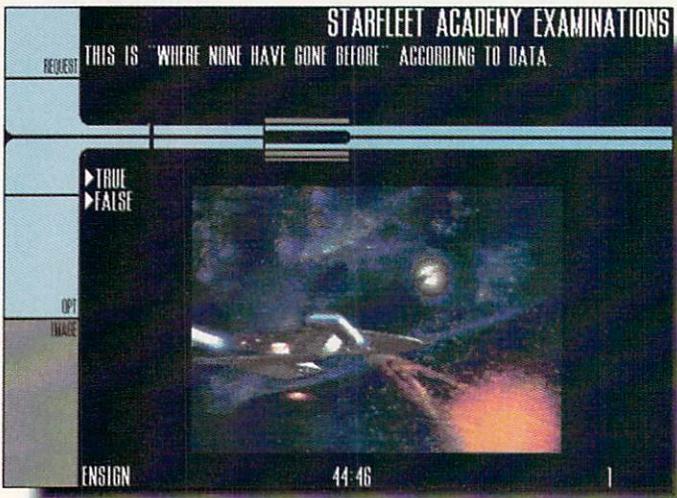
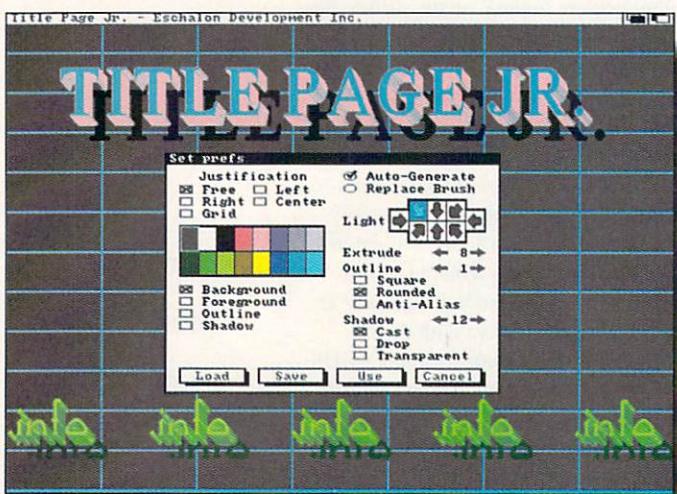
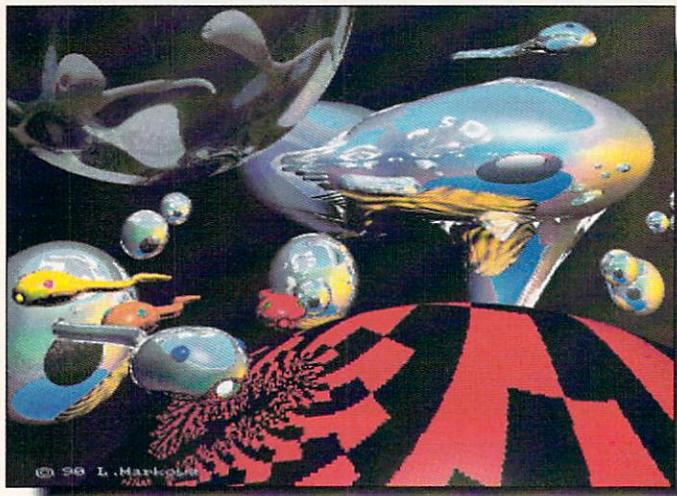
## SOURCES

*AudioMaster III*, \$99.95. Aegis/OXXI, 1339 East 28th Street, Long Beach, CA 90806, 213-427-1227  
*E-Z FM Synthesizer*, \$59.95. The Other Guys, 55 North Main, Suite 301, P.O. Box H, Logan, UT 84321, 801-753-7620  
*All In One*, \$79.95. Gold Disk, P.O. Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2, 416-828-0913

Sampled  
sounds can be  
much larger and  
more complex  
than those  
produced by  
synthesis.



# PUBLIC DOMAIN



## AMERICAN PEOPLE/LINK

The Amiga Zone & Amiga Zone PRO are American People/Link's Amiga support Clubs. Each file's number is tagged with either "AZ" or "AZPRO" to indicate which Club it lives in. (For info on signing up for People/Link call 800-524-0100 by voice or 800-826-8855 by modem.)

### POST13.LZH [25364/AZ]

*Post* is Adrian Aylward's software based Amiga PostScript™ interpreter. It supports the full Adobe language, with only minor variations. *Post* can be fed any PostScript file and will display it on your screen, dump it to an IFF file, or output it at any printer's highest possible resolution, even all at once. The results can be astounding, even on a lowly 9-pin printer. *Post* also has an interactive mode where you can enter PostScript language commands directly and see the results in an instant. Arp.library is required and so is *ConMan* (V1.3+) for interactive work.

### MSH.LZH [25431/AZ]

"The MessyDOS File System" by Olaf Seibert, *MSH* is a set of programs that enable you to use IBM-PC diskettes in your Amiga disk drives (3.5" or 5.25"), just as if they were regular Amiga disks. Unlike other programs, *MSH* doesn't just let you copy files to or from MS/DOS disks, it lets virtually any Amiga program's file requester directly access files on MS/DOS disks! You'll need to create a mountlist entry and install a few small pieces on your system but the docs explain everything quite well.

### MASTERTRACES.LZH [25661/AZ]

A Plink exclusive! Two wild new raytraces by one of the undisputed masters of Amiga art: Louis Markoya. *MarineLand* is the coral reef version of Louis's popular *WoodLand* picture. *Amy-DoesKawaguchi* [shown] is an homage to and study of the technique of Japanese computer artist, Y. Kawaguchi - a swirling phantasmagoria of color and shapes like nothing you've ever seen.

### TPJR11.LZH [25956/AZ]

*Title Page Jr.*, by Eschalon Development Inc. is a limited shareware version of their commercial package, *Title Page*. Although it can't do any of the fancy effects or controlled embossed backgrounds that the commercial package can, *Title Page Jr.* is a very capable titler with many of the features that other commercial titlers have.

### ST:TNG TRIVIA CHALLENGE

There's just no end to Amiga games based on *Star Trek*. Gregory Epley's *NGTC* is a massive two-disk (or hard drive installable) quiz feast for *ST:TNG* fans. Nearly 500 trivia questions about first season episodes, many with graphical or audio clues. You'll need six files for the complete game: [25804/AZ] through [25809/AZ]. The superb documentation is available separately as *NGTC-DOCS.LZH* [25810/AZ].

- Harv Laser [CBM\*HARV]

# PUBLIC DOMAIN

## GENie

GENie is General Electric's commercial online information service. GENie's \*Starship Amiga\* software library has over 8000 files available for downloading. For information on signing up for GENie, call 800-638-9636.

## DEMONSTRATORS

For some of those who would rather try before they buy commercial software (especially for big bucks) there are a few demo files available on GENie worth checking out. For example, those in the market for a desktop publishing package can run *PageStream 2.0* [#9555 - PAGESTREAM2DEMO-1.LZH and #9554 - PAGESTREAM2DEMO-2.LZH] up against *Saxon Publisher* [#8609 - SAXDEMO.LZH] for mere pennies on the dollar. It should be kept in mind that virtually all commercial demos are "crippled" and usually come with little or no documentation. Qualifying for most entertaining (aside from game demos) was the *CANDO* demo [#8792 - CANDODEMO1.LZH], especially if you like to play dueling sound samples. For those who have stripped their Workbench disks and disdain reading "readme" files, the *CanDo* demo requires the Ruby font for a couple of sections to work properly.

## OH, UTILITIES!

*DekSID 1.11* [#9514 - DEK111.LZH] is a shareware floppy disk track/sector/hex file editor by Christian Warren and features a full 512 byte data block display, checksum recalculation and boot block save and restore functions. *DiskFastCopy* [#9306 - DISKFAST-COPY.LZH] is an Intuition-ized semi-replacement for both Format and Diskcopy which runs from both CLI and Workbench. Besides the Verify and Buffer options, *DiskFastCopy* will actually format two floppies at one time. Nice work from Radical Eye Software.

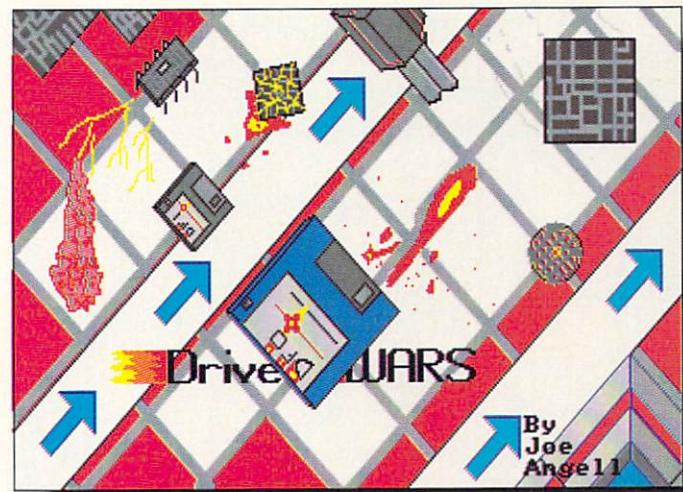
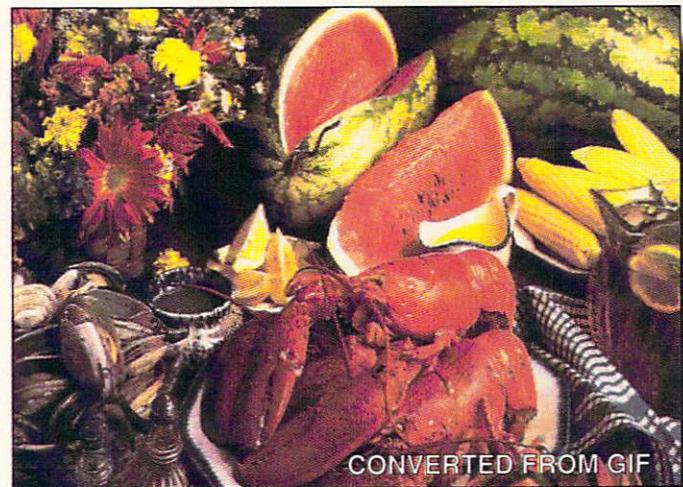
## PICTURE ME THIS

Now that Super VGA is the graphic envy of the computer universe, you may be more tempted than ever for a little payback by leeching 'their' GIF files and converting them to Amiga IFF format. *HAMLAB 1.0* [#8768 - HAMLABDEMO.LZH] is a shareware (\$15) modular Intuition-ized utility by J. E. Hanway which converts GIF, Atari ST Spectrum 512, and MTV Raytracer files into Amiga sliced HAM (or SHAM) IFF files. *HAMSharp v1.5* [#7798 - HAMSHP15.LZH] by Ken Lau runs from CLI and converts GIF files into various IFF formats depending on each GIF's color and size requirements. *SHAMVIEW* [#6982 - SHAMVIEW\_3.0.ZOO] by Amiga Resource's Rhett Andersen is a conversion system with separate CLI utilities for decoding GIF files, converting them to 24-bit color bitmaps and then re-converting to SHAM IFF files.

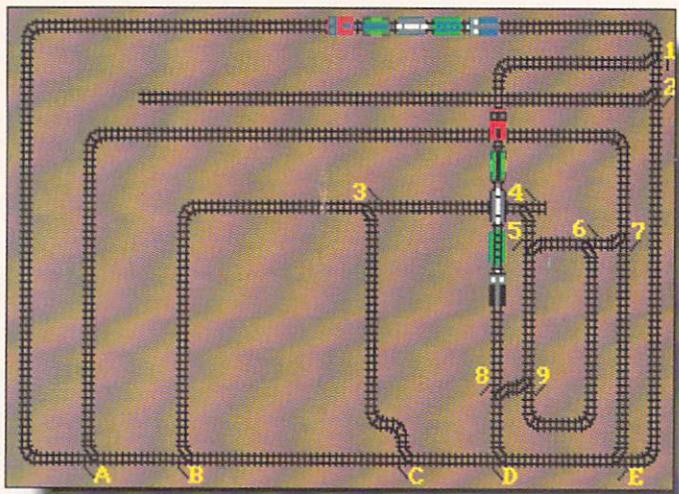
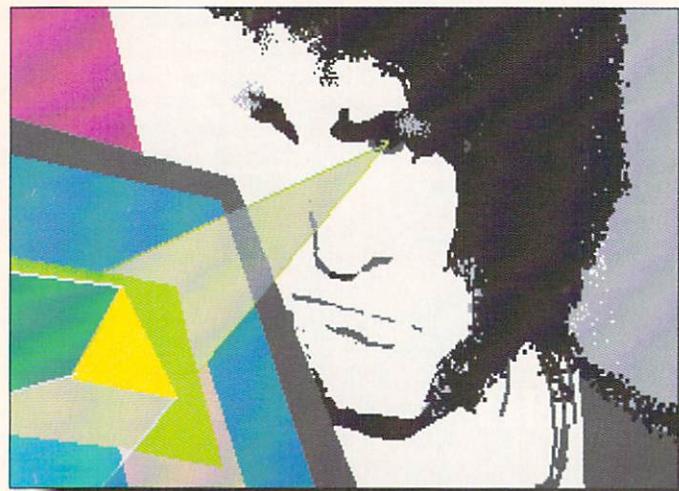
## FUN AND GAMEZ

Two more SEUCK efforts worth mentioning for you *Shoot'Em'Up* arcade junkies: Joe Angell's *DRIVEWARS* [#9632 - DRIVE-WARS.LZH] puts you on the front line against all sorts of floppy disk virus villains; and *WINDY DAY* [#9670 - WINDYDAY.LZH] by Harvey Warwick manages to coax horizontal scrolling action out of a game system that supposedly doesn't support it.

- Don Romero



# PUBLIC DOMAIN



## DISK COLLECTIONS

### CHIRON CONCEPTIONS

Chiron Conceptions, Inc. is an exclusively Amiga shareware company run by Dan Knight. Though small, his firm has a wide variety of disks available, and their organization shows a feeling for what users want. Chiron disks are generally filled to the brim with programs, a practice not followed by all distributors. But sheer bulk should not be the determining factor, because you want programs you can *use*. When comparing prices, check to see exactly what you are getting. A good catalog helps, and Chiron's catalog on disk is well organized, with a print utility included. Best of all, it's free, without even a shipping charge. This means you should request one today.

**Chiron Brassart Slideshow 1 & 2:** I've seen many slideshows on the Amiga, and this is one of the most interesting. Ecole Brassart is an artist whose work embraces several styles, from very bold, commercial and posterish, to what seems almost pastel-like, and subtle. Chiron calls them "PG rated" though I doubt any kids will be adversely affected by viewing them. I know I wasn't...

**Chiron AMY-111: Diversions:** This disk contains many games for you, including two maddening block-move puzzles, a dice rolling game, a maze game, etc. *A Nice Day In The Maze* has such niceties as an optional onscreen map, shadows, a self running demo and an "impossible" level. My favorite is *Electric Train*, a construction set complete with all the track parts you remember from your childhood, plus realistic sound effects you don't.

**Chiron AMY-411: Sound Effects 2: Surprise!** This disk contains sound effects, including voices and animals. Some you may have, but the farm animals are required if you want to emulate Mark's Amiga with its Iowa barnyard noises. Also present are the ever-popular HAL ("I'm sorry Dave, I'm afraid I can't do that...") and some Star Trek favorites.

**Chiron AMY-513: CLI & C Tutorials:** For those of you who find the CLI confusing or impossible, this is your disk. It contains a humorous, well-written and informative series of tutorials which will demystify the Command Line Interface. Aimed at the absolute beginner, it also has much value for more experienced users. Particularly useful are the instructions on pruning the chaff from your overloaded Workbench disk. If you are really interested in your Amiga, this disk is more valuable than most of the Amiga mags out there - 'cept *.info*, of course.

### WHERE TO BUY

Chiron Conceptions, Inc., PO Box 19474, Jacksonville, FL 32245. (904) 260-6521. Prices: \$5.00 per disk, shipping included for US, Canada, and APO addresses. Foreign orders add \$4.00 per order for Air Mail delivery. Catalog free. Checks, money orders and cash accepted.

- Jeff Lowenthal

# SONY SMO-S501 Optical Drive

**W**OW! YIPPEE! HURRAY! The technology we've been waiting for is finally here. Active Circuits has come out with an erasable optical drive system for the Amiga. The drive itself is a Sony, which presumes reliability, and it hangs off a readily available Commodore 2091 SCSI controller. It uses removable cartridges, each of which (hang onto your socks, kids) holds an astonishing 650 megabytes, divided into 325 megs per side. I copied my entire 20-meg Bernoulli disk onto the Sony and an "info" showed it at 4% full. Now that's what I call mass storage. Active Circuit's software driver seems perfectly transparent, allowing me to use the thing with-

out special commands.

Setup is not for the faint of heart. If you're not more than passingly familiar with the ins and outs of mountlists, startup-sequences, board-swapping, and DIP switches, get someone to help you who is. (I firmly believe, however, that the only way to learn to deal with such things is by doing. Don't be afraid to get your hands figuratively dirty.)

Speed is about the same as for an average hard drive, which is perfectly adequate for most applications. Active Circuits is promoting the drive for use with animations (they also have a 24-bit graphic rendering system built around a Targa board), but with this amount of available storage, I could also see it being used as a file server for a net-

work. The drive isn't cheap, retailing at \$5500, while the cartridges are \$250 apiece, which works out to a reasonable 38 cents per meg. If you're looking for enormous amounts of storage, look no further. Active Circuits and the Sony SMO-S501 provide it in unlimited quantity.

- Tom Malcom

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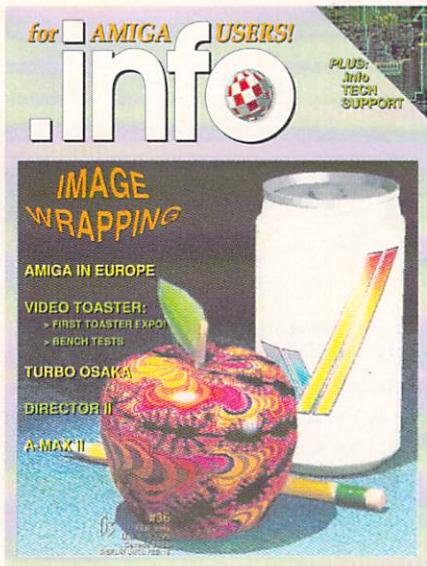
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## #2 INFO 64, Winter 1983/84

Guide to C64 products, Koala pad, Flexidraw, UltraBASIC-64, Home Accountant vs. C.P.A.

## #3 INFO 64, Spring 1984

Product Round-up: 1000 product listings for C64, Superbase 64, Commodore LOGO, C64 Forth, Model Diet, Computer Mechanic.

## #6 INFO 64 Spring 1985

Color Gallery! C64 hard drives, Intro to Assembly Language, COMAL 2.01, The Print Shop, Whithier C/P.M.

## #9 INFO Dec/Jan 1985/86

Expanded C64/128, Amiga color gallery, Guide to C128 software, Network Wars, 1571 Disk Drive Survival Guide.

## #10 INFO May/June 1986

Monitor Roundup! C64 wordprocessors, Multiplan for C64/C128, Amiga BASIC, Tips & hints.

## #11 INFO Aug/Sept 1986

Product Roundup issue: over 1500 hardware and software listings for C64, C128 and Amiga.

## #12 INFO Nov/Dec 1986

Graphics report: C64/128 and Amiga painting, CAD, drafting, video animation, tools and utilities. Idea-processors, 8 bit business software.

## #13 INFO Jan/Feb 1987

Games issue: C64/C128 and Amiga games. 8-Bit business and application software (part I), Telecommunication networking, Amiga Music.

## #14 INFO Spring/Summer 1987

Product Roundup issue: over 2000 hardware and software listings for C64, C128 and Amiga. First look at the A500 & A2000 systems.

## #15 INFO July/Aug 1987

1st Annual C.H.U.M.P. Magazine! Commodore & Amiga Survival Guide, Anne Westfall interview, TDI Modula 2, Supra Hard Drive.

## #16 INFO Sept/Oct 1987

Graphics Renaissance! GEOS Update, C128 BASIC compilers, Microtroll, Fontmaster, Amiga 500, Sidecar, Genlock, Multi-tasking.

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**BACK ISSUES**

### #18 INFO Jan/Feb 1988

Desktop Publishing & wordprocessors (part I), Virus diagnosed, Geos Update, C64 Power Cartridges, C128 Superpak II.

### #19 INFO Mar/Apr 1988

Desktop Publishing & wordprocessors (part 2), Leo Schwab interview, GEOS Update, ICT hard drive, Digital SuperPak2, Thoughtform.

### #20 INFO May/Jun 1988

Desktop Video: Titlers, genlocks, converters, C64 slide show programs, GeoStuff, AmigaDos 1.2. Bugs, Joel Hagen tutorial.

### #21 INFO Jul/Aug 1988

Second Annual C.H.U.M.P. Magazine! Jay Miner interview, Easing The Upgrade Path, GeoStuff, Virus prevention, Over 40 8 & 16 bit reviews.

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### #25 INFO Mar/Apr 1989

Amiga Animation Round Up, Rodney Chang interview, C128 T.H.I.S., GeoCalc 128, Dr. Term Pro, AC/BASIC, Microfiche Filer Plus.

### #26 INFO May/June 1989

Paint Program Round Up, Loren Lovhaug interview, Removable Mass Storage, 1581 Toolkit, MicroLoyer, WillMaker, Pen Pal.

### #27 INFO Jul/Aug 1989

3rd Annual C.H.U.M.P. Magazine! Dale Luck interview, Sound & Music, Fractals, GeoProgrammer, Silentwriter LC890, Transcript.

### #28 INFO Sept/Oct 1989

Video Boot Camp! High-End Amiga Expansion, Gail Wellington interview, 3D options, Home Town, Viking I, A-Max, Anti-Virus, V.I.P.

### #29 INFO Nov/Dec 1989

Annual Games Issue! Chris Crawford interview, SFX Sound Expander, The Write Stuff 128, Toshiba ExpressWriter 301, RawCopy, Mac-2-Dos.

### #30 INFO Jan/Feb 1990

Amiga DeskTop Publishing Tools, LOGO, A590 Hard Drive, Dual Serial Board, Abacus Books, Twin Cities 128 book.

### #31 INFO July 1990

Amiga 3000, AmigaVision, AmigaDOS 2.0, R.J. Mical interview, Ray-Tracing, COMAL 2.0, TV\*Text Pro, CanDo, CrossDOS, FractalPro, ScanLab 100.

### #32 .info September 1990

First issue of monthly All-Amiga .info! Turbo Silver brush mapping, Laurence Gartel interview, Page Stream 1.8, Power PC Board, introducing CDTV, all new .info Technical Support section by Sullivan and Zamara.

### #33 .info October 1990

Fractal Frontiers, Inside AmigaVision, Peggy Herington's new Music & Sound column, Pro Video Post, The Art Department, Archivers.

### #34 .info November 1990

The Video Toaster Cometh! George Christensen interview, ProWrite 3.0, Synthia II, Saxon Publisher, Pro Draw 2.0, Hard Disk Management, Forms in Flight.

### #35 .info Dec 90/Jan 91

Annual Games Issue! The year's top 25 games, Exclusive - Amiga Unix, Battletech Center, Elan Performer, GVP Impact Series II SCSI RAM Controller.

### #36 .info February 1991

Image Wrapping, The Amiga in Europe, Victor Osaka interview, World's first Video Toaster Show, Renderman, A-Max II.

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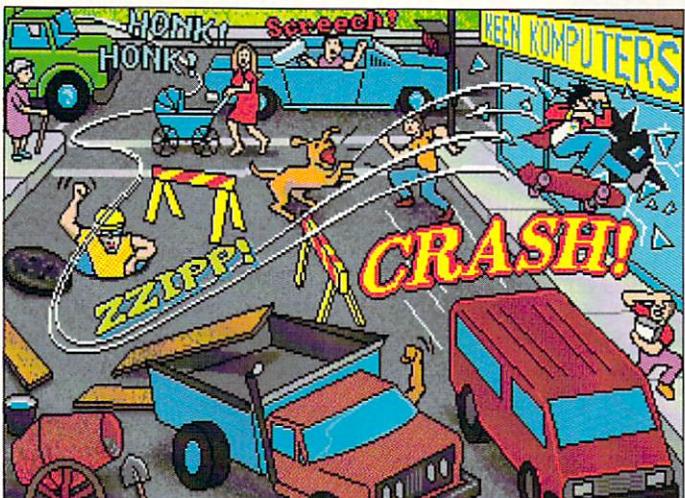
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# Morton A. Kevelson on Hardware



The Power PC Board setup screen.

**Mort gives  
Pulsar's  
Belly Board  
a thorough  
examination.**

**T**he Power PC Board, which originates in Holland, has changed very little since I worked with its prototype in issue #32. It is still a bit larger than Commodore's 512K RAM expansion and it still fits right into the Amiga 500's memory slot. It still comes with one megabyte of RAM, a NEC V3.0 microprocessor running at 8.0 MHz, Phoenix BIOS version 2.52 on ROM and a battery backed up clock. The only notable differences are the lack of any on-board jumpers and a color change from the conventional PC board green to a dusky shade of red. Unlike the A501 RAM expansion, the final version of the Power PC Board lacks radio frequency shielding. This is not likely to cause any problems as the Amiga 500 has its own shielding, at least above the belly slot; however, it may upset the FCC.

With the application of some creative shoe-horning, Pulsar has managed to squeeze the Power PC Board, its 16 page manual, the custom boot disks and the supplemental software into the original packaging for Microsoft MS/DOS Operating System v4.0.

The software provided with the Power PC Board includes Microsoft MS/DOS Version 4.0 with GW-BASIC, which is supplied on three disks and comes with a massive 430 page reference manual. This pack-

age also includes Microsoft MS/DOS Shell with its own 118 page User's Guide. Pulsar has also thrown in an additional disk which contains the shareware programs *File Express*, *As-Easy As*, and *Galaxy* which are a database manager, spreadsheet, and wordprocessor, respectively. For the Amiga side, a copy of *CrossDOS* from Consultron is provided. *CrossDOS* is a software device driver for the Amiga which lets the Amiga disk drives access MS/DOS format disks under AmigaDOS for both reading and saving files. [See .info #31 - Ed.]

In the absence of any special instructions, the *Power PC Board* looks to the Amiga 500 like nothing more than a 512K RAM expansion module. In order to access its second 512K of RAM and its real time clock you have to install a set of custom drivers. The *Power PC Board*'s boot disk includes an automated procedure which updates your Workbench disk. If you are not booting from a hard drive then you will have to install these drivers on all of your boot disks if you want to access the extra hardware.

Once the clock driver is installed the *Power PC Board*'s real time clock looks just like the Commodore version as far as the Amiga is concerned. The only difference is the use of Pulsar's PCClock command instead of the AmigaDOS SetClock. However, the *Power PC Board*'s second 512K of RAM is configured as a fixed capacity, 512K RAMdrive. Do not confuse the *Power PC Board*'s RAMdrive with the AmigaDOS RAM: device. The AmigaDOS RAM: device dynamically allocates memory, so that it is always full, and its size is limited only by the available RAM. The *Power PC Board*'s RAMdrive resembles Commodore's RAD: disk in that it does retain its contents after a warm boot.

To start up the XT side of the system you boot the Amiga with the *Power PC Board* boot disk. Holding down the left mousebutton at the start of the boot process invokes a utility menu which lets you access the installation options for the clock and RAMdrive software mentioned above as well the hardware configuration options for the XT side of the system. Make sure you are using a backup copy of the boot disk as the XT configuration options are saved on it.

The *Power PC Board*'s skimpy manual describes all of the configuration options and the various setup procedures but offers very little additional information about the system. Although this information is not essential, as the *Power PC Board* appeared to be very compatible with all of the MS/DOS productivity applications, it would have been nice to know what to expect. I suspect that the system's limitations will occur

with graphic dependent applications as well as software that tries to directly access the computer's hardware.

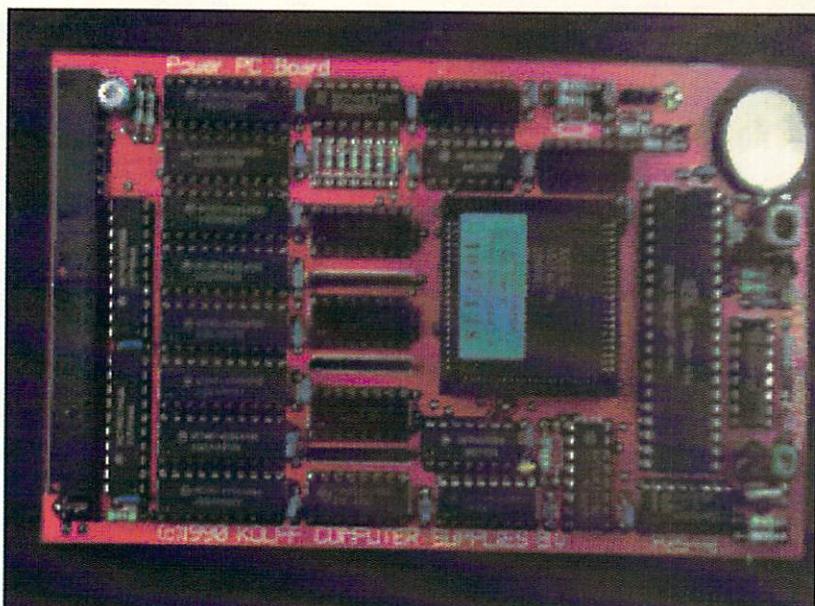
The XT side of the system can support up to four floppy drives. These can be either 3.5 inch drives with 80 tracks or 5.25 inch drives with either 40 or 80 tracks. The 3.5 inch drive capacity is limited to 720K. The 5.25 inch drive capacity can be either 360K or 720K. The disk drive setup screen also lets you set such esoterica as step time, initializing time, head settle time and who controls (Amiga vs PC); however, the manual cautions you against changing these settings unless you really know what you are doing. The manual also neglects to explain the significance of the "who controls" option nor does it tell you what will happen if you choose PC instead of Amiga. It is not likely that you can easily find out what you are doing as no additional information is provided.

You are given the choice of emulating either the Hercules compatible Monochrome Graphics Adapter (MGA) display, with 720 by 348 pixels and three screen colors or the Color Graphics Adapter (CGA) with either 640 by 200 pixels or 320 by 200 pixels. The CGA emulation can be set up with either four or eight colors. The four color mode is supposed to run faster, but I was unable to detect any differences in speed. Note that the standard CGA display on a real XT can actually have up to 16 colors in text mode. You can adjust the display palette to pick the colors from any of the Amiga's 4096 available colors. You also have the option of turning interlace on to improve compatibility with video recording equipment. Note that turning on interlace does not increase the display resolution.

The I/O assignments include the XT's printer ports, mouse port, RS-232 port and joystick ports. You can assign any of the XT's LPT1, LPT2 or LPT3 printer devices to the Amiga's parallel port. You can also enter a reset command string which will be sent to the printer when the system is started up. Mouse support is presently limited to the Mouse Systems mouse for which you have to supply your own driver for the XT side. The mouse port can be assigned to either COM1 or COM2 on the XT side and to either of the Amiga's game ports. I obtained a copy of version 5.0 of the Mouse Systems mouse driver, but I have not been able to get the system to recognize the Amiga's mouse as of this time. According to Dr. Oxide, the mouse will work with the Genius mouse drive. In a similar fashion, either COM1 or COM2 can be assigned to the Amiga's serial port or either of the Amiga's joystick ports.

Some of the system configuration parameters can be changed while running from the XT side. This setup screen is accessed by pressing both the right Amiga key and the Help key. Some of the options, such as screen colors and serial port assignment are implemented immediately. Other changes, such as the 640K to 704K memory toggle and the df0: to df1: disk drive swap with the XT's drive A: require a reset of the XT before they take effect. The changes which are done using this feature are not saved to the boot disk.

The one megabyte of RAM shows up on the XT side as 704K of system RAM. This can be reduced to 640K to maintain compatibility with some MS/DOS applica-



The Belly Board Exposed

tions. The *Norton Utilities* also reports 128K of display memory. The *Norton Utilities* computing index gave the board a speed rating of 3.3 as compared to a standard IBM XT. The prototype of the *Power PC Board* also provided 64K of EMS on the XT side. This feature is not enabled on the current version. Dr. Oxide has indicated that the ability to access all of the remaining RAM on the *Power PC Board*, as well as any of the Amiga's fast RAM will be added to a future release.

The system has a variety of built in enhancements, many of which are not mentioned in the manual. For example pressing the Caps Lock, Num Lock, or Scroll Lock keys causes a reverse video C, N, and S to appear in the lower left hand corner of the display. These indicators take the place of the keyboard lights which are found on many XT keyboards.

Dr. Oxide has indicated that an upgrade to the *Power PC Board* is already on its way. Upgrades are easy to implement as they are all done via software. The next upgrade should resolve most of the compatibility problems mentioned above. Also scheduled are a variety of custom mouse drivers and 16 color CGA support and faster disk drive operations. Enhancements scheduled for early next year include Amiga hard drive support, access to Amiga fast RAM, EGA, and VGA support.

The *Power PC Board* is not a Bridgeboard. When it is up and running it does not permit multitasking, but it is an impressive bit of hardware and software engineering. It does a commendable job of integrating XT emulation with the Amiga 500's hardware resources, but it does present some compatibility problems. Its built-in clock and part of its RAM do not conform to the Amiga standards. At \$525 the *Power PC Board* costs about as much as a stand-alone XT which comes complete with its own disk drives and expansion slots. The decision to buy should depend on your needs.

#### Power PC Board

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In this issue, Tech

Support editor

Chris Zamara

reviews CSA's

Mega-Midget Racer

68030 accelerator;

Derek Grime tells

you how to squeeze

even more out of

Deluxe Paint III; and

David Martin

introduces you to

seven absolutely

indispensable

AmigaOS

commands.

## THE MEGA-MIDGET RACER 68030 ACCELERATOR

by Chris Zamara

**Y**ou might not guess from its oxymoron of a name, but the *Mega-Midget Racer* from Computer System Associates (CSA) is a 68030/FPU accelerator board for the Amiga 500, 1000, or 2000. The board plugs into the MC68000 CPU socket and fits neatly inside the computer's case. There are several accelerator boards to choose from for the Amiga, but the *Mega-Midget Racer* (MMR) is, comparatively speaking, inexpensive: the 20 MHz version of the basic board is \$795, which translates to big numbers on the bang-for-the-buck scale.

An accelerator board might seem like an unnecessary luxury for your computer until you try one on; the added performance of the machine can change its whole personality. An accelerated machine feels different from the stock machine for much the same reason driving a high-performance sports car feels different from driving an econobox: speed and power. For most applications, the extra speed makes things seem more effortless: requesters pop up *right now*, text conversions or spreadsheet recalculations seem instant, text appears on the display without looking like it was rendered one line at a time. With a math coprocessor chip installed, the effect can be even more dramatic: raytracing, Mandelbrot generation, or other calculations involving floating-point math can benefit enormously. One of the Mandelbrot benchmark tests provided with the CSA board shows a speed increase of more than 50 times over a standard Amiga 2000!

### How Accelerators Accelerate

A basic reason for the performance increase is the use of a MC68030 CPU instead of the standard MC68000. The 68030, with its improved instruction pipelining and instruction cache, churns through code faster than a 68000, even at an equivalent

clock frequency (the clock frequency determines the length of each CPU cycle, which dictates the speed at which the CPU runs). Coupled with a higher clock speed than usual - the standard Amiga's 68000 is clocked at 7 MHz (MegaHertz), while the 68030 on the accelerator board can run at speeds up to 33 MHz - the resulting performance increase affects almost every aspect of computing. As you can see in the bar chart on the next page, the 'Sieve' benchmark runs almost six times faster with a 25 MHz 68030 over the stock 7 MHz 68000.

Another source of added speed comes into play only when 32-bit memory expansion is used. Memory that can be addressed in 32-bit words takes advantage of the 68030's 32-bit address bus, allowing a 32-bit value to be loaded by a single memory fetch instead of two 16-bit fetches. The *Mega-Midget Racer* board has connectors for an optional 32-bit RAM daughterboard which can hold from one to eight megabytes of RAM. It also has on-board sockets for 512k of high-speed static RAM that can be used to store a copy of the Amiga's ROM operating system and execute ROM routines from there instead of from the slower 16-bit ROM (or RAM in the Amiga 1000) memory chips. The use of 32-bit RAM is responsible for a significant speed increase, and brings out the full potential of the accelerator board. As you can see in the yellow bars of the benchmark graphs, the use of the 32-bit DRAM increases performance substantially in most tests.

What a fast 68030 with 32-bit memory can do for everyday computing is nothing compared to what an FPU (Floating-Point Unit) coprocessor can do for floating-point math. The *Mega-Midget Racer* has a socket for the installation of a MC68881 or a MC68882 math coprocessor, which can be clocked at a different frequency from the 68030 by the installation of a separate crystal; depending on the coprocessor chip that



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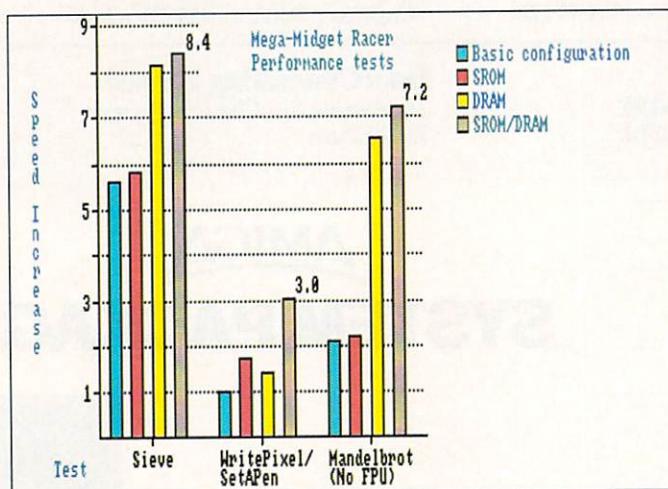
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Circle #120 on the Reader Service Card

Figure 1:  
Speed tests  
with various  
configurations of  
the 25 MHz  
Mega-Midget  
Racer.



you purchase, you could run the FPU at 33 MHz (for example) even if the CPU is running at 25. The addition of the FPU may have no effect at all for many programs, since it is only faster when programs use the system-provided floating point math libraries, or use the FPU directly. For programs that do use the FPU's capabilities, however, the performance increase is dramatic; the accompanying benchmarks show that some tests using the FPU run over 40 times faster than on a stock Amiga, while the same program using only the 68030 runs just over seven times faster. If you use ray-tracing, 3D, or CAD programs, you may benefit from the addition of an FPU. You should check with the software vendor to see if a particular package uses an FPU if it is installed. Depending on the applications they run, many users can get away without the addition of the FPU chip, which is quite expensive; the 25 MHz 68882 shipped with our test unit added \$249 to the total cost.

While the performance boost is definitely noticeable, not everything you do on your computer will be speeded up as much as the technical specifications would suggest. A primary bottleneck is often the hard drive, since some operations are more I/O than CPU intensive. Even for some applications that don't use disk storage, the speed-up won't be that great because the performance limitations are imposed by the custom graphics chips, not the CPU or I/O device. As you can see from the benchmarks, the WritePixel test, which consists mostly of graphics work, isn't speeded up at all by the basic configuration; you may find similar results with other blitter-intensive operations as well. You'll probably find that the accel-

erator works in mysterious ways: sometimes, you hardly notice it's there; other times, you can't believe that the computer actually did what you asked it in the instant that it took. It all depends on exactly what the system is doing during a specific operation, which is not always obvious.

### Installation

Our *Mega-Midget Racer* test unit was a 25 MHz model and came with the optional plug-in 32-bit memory daughterboard populated with two megabytes of RAM. The entire two-board unit is designed to fit right inside the case of any Amiga, plugging neatly into the 68000 CPU socket on the motherboard. For installation in an Amiga 2000, a special non-socketed version of the daughterboard must be used to fit inside the case. Our test unit was an A500 version, but we installed it in an Amiga 2000 anyway, and although the overhanging memory board prevented the computer's case from being reinstalled, it worked perfectly. (The Amiga 2000 version of the memory daughterboard, of course, fits properly inside the system's case.)

Connecting the board is a matter of opening the computer's case, unplugging the 68000 from its socket, and plugging the *Mega-Midget Racer* in its place. The 68000 then plugs into an empty socket on the *MMR*, allowing you to use the board's 68000 emulation feature. The operation is accomplished with the help of detailed instructions and diagrams in the user's manual. Instructions for installation in an Amiga 1000 are not provided, but a technical hot-line number is provided for assistance. With the Amiga 500 and 2000 models, there are

no other modifications required to the Amiga's circuit board: no jumpers to add, traces to cut, or chips to replace other than the CPU. The board is simple enough for anyone to install, but ham-handed hackers may wish to give the job to their dealer (especially since you'll void your computer's warranty if you do it yourself).

The *MMR* board has several jumpers that must be set according to the options that you are using: the type and amount of on-board static RAM, the speed of the FPU, and a few others. Our test unit arrived with all jumpers properly set up, and we assume that this will be the case with all boards as shipped; you'll have to remember to change the jumpers if you're adding memory or an FPU later, however.

The 20-page user's manual provided with the board is fairly clear, thanks to diagrams and step-by-step instructions, but is filled with the illiteracies and spelling errors that are all too common in hardware manuals. It is unfortunate that hardware designers don't feel the need to be able to communicate well in English, or at least have their documentation edited by those who can.

To complete the installation, a program provided with the package configures the board after the system boots. You can add the program call to your Startup-Sequence to make this automatic.

### Features and Options

For the most part, the accelerator board is a plug-in-and-go affair, but depending on how much you can afford, there are a number of options that can push the system to its limit.

The basic *MMR* board comes in 20, 25, and 33 MHz versions, the difference being the 68030 chip used and the crystal used to set the clock frequency. The faster you go, the higher the price tag: \$795 for the 20 MHz board, \$895 for the 25, and \$1095 for the 33.

The board has a socket for an optional 68881 or 68882 FPU; you can order the board with the FPU in place, or you can add your own later. The FPU can be clocked at the same frequency as the CPU, or, by plugging in another crystal, at its own (usually higher) frequency. FPUs up to 50 MHz can be used, but our test unit came with a 25 MHz part, which was expensive enough at \$249.

A unique and important feature of the *MMR* is its built-in handling of the optional

on-board 32-bit static RAM (SRAM). Four sockets on the board allow the addition of 512k worth of high-speed memory chips, which added \$399 to the price tag of our test unit. By using a special 'SRAM' option with the provided configuration software, you can copy the operating system from ROM to the faster 32-bit SRAM and execute it from there. The address translation required to accomplish this would normally be done by using the 68030's MMU (Memory Management Unit), but the *MMR* board has special hardware to accomplish this, leaving the MMU free for other applications or future versions of the operating system that may use it.

The SRAM can be configured in a variety of ways: since versions of the operating system prior to the newly-released V2 only use 256k of ROM space, the remaining 256k of SRAM can be added to the system memory list as high-speed 32-bit RAM. Alternatively, you can use the entire 512k of SRAM as system memory and skip the ROM transfer entirely, although for general

use the relatively small amount of memory gained is probably not worth forfeiting the SRAM feature. With Version 2 of the operating system, which requires a whole 512k, there is no SRAM left over to be used by the system. All of the various options are selected by command-line arguments to the configuration program, so you are not locked into a particular configuration by hardware settings.

For general-purpose 32-bit RAM expansion, the *Mega-Memory* daughterboard can be plugged into the processor board. The Amiga 500 version of the board has sixteen sockets for DRAM (Dynamic RAM) chips, and can take two banks of 256k by 4-bit or 1M by 4-bit chips. This allows RAM expansion from one to eight megabytes. The Amiga 2000 version uses soldered-in chips, and must be ordered in the desired capacity. Our test unit was shipped with a full complement of 80-nanosecond 4256 DRAM chips, for a total of 2 Megabytes of 32-bit DRAM; price tag for the populated board was \$499. The DRAM is tested and

added to the system memory list by the configuration program by using a 'DRAM' option.

If you've added the DRAM board, but you don't go with the internal SRAM, you can still run the operating system from 32-bit RAM using Dave Haynie's public domain program *SetCPU*. This program has a number of options for configuring the CPU, and is compatible with the *MMR* board. If cost considerations have you deciding between the internal SRAM or external (daughterboard) DRAM but not both, we recommend going with the external DRAM. Based on the prices of our test unit as shipped, for just \$100 more you get 2 Megabytes of expansion DRAM vs. 512k of SRAM, and 32-bit RAM is extremely beneficial in a 68030 system. (RAM prices fluctuate, and there have been price reductions on the SRAM since our test unit was shipped.) The DRAM is slightly slower than high-speed (70ns) SRAM, but the difference in real terms is minor. Using *SetCPU*'s 'FASTROM' option will get you



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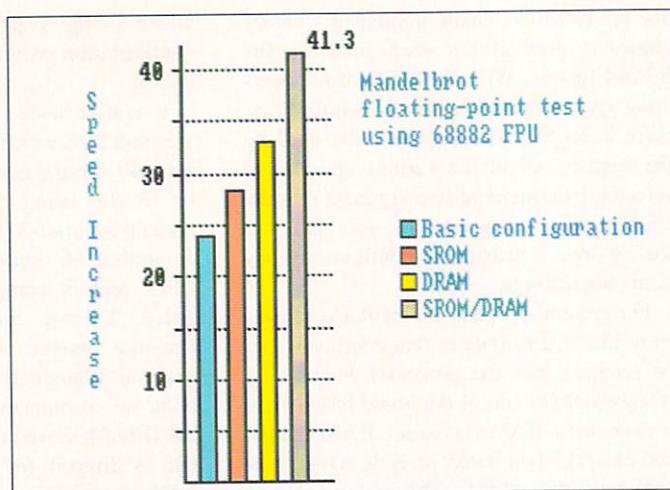


Figure 2:  
Mandelbrot  
calculations  
with various  
configurations.

the same 32-bit ROM capability provided by the *MMR* board, with the only cost being that the 68030's MMU will be used and will be unavailable for other applications. This is a slight trade-off, and you can always add the SRAM later if you wish.

## Compatibility

The *Mega-Midget Racer* has another useful feature that doesn't cost extra money. By plugging in the 68000 CPU chip that you removed from the Amiga, you can switch to 68000 mode via software, effectively removing the *MMR* from the system. The CPU switch involves a reboot, but may be the only way to run some games or other programs that don't work right with the 68030.

For the most part, adding the 68030 board shouldn't cause any problems, except for programs that are written improperly. Perhaps the most infamous example of this is *AmigaBASIC*, which uses the upper eight bits of address registers to store data; this is incompatible with the 68030's 32-bit address bus, and hence you can't use *AmigaBASIC* when using the 68030. Other programs that might cause problems are games that rely on the speed of the standard system to time various events rather than using the Amiga's timers. More rare cases of incompatibilities can be caused by 'race' conditions, blitter problems, and other time-dependent side effects caused by the higher speed of the CPU. In our tests, this problem manifested itself in improper text rendering with high-speed text display programs, and a shell program (*Csh 2.07*) that would occasionally crash. The same problems occur on an Amiga 3000, so the prob-

lem is not with the accelerator board itself, just that some software can't handle high-speed operation. Most software will be upgraded to work with the faster processor speeds, since that is quickly becoming the standard, with the Amiga 2500 and 3000, and the proliferation of add-on accelerator boards.

## Benchmarks

This is a review, not a multi-product comparison, so we didn't have other manufacturer's accelerators on hand to test. We did run the board against an Amiga 3000, and found performance of the two machines almost identical, within one or two percent. One advantage that the *Mega-Midget Racer* has over the Amiga 3000, however, is that the math coprocessor can be clocked at up to 50 MHz (depending on the rated speed of the chip), while the FPU in the 3000 is always clocked at the speed of the CPU. Our *MMR* test unit, in fact, came with an extra 28 MHz crystal even though the 68882 was rated at 25 MHz. A call to CSA confirmed that this was a shipping error, and they do not recommend running chips beyond their rated maximum. The chip worked fine at 28 MHz however, with no apparent side effects except that the hyped-up A2000 consistently (albeit slightly) outperformed the 3000 in floating point benchmarks. For the benchmarks reported here, the FPU was clocked at the recommended 25 MHz.

The disk that is shipped with the *MMR* board contains a few benchmark programs for testing the speed compared with a stock machine. The programs contain a number of tests, with several floating-point tests

that compute a preselected portion of the Mandelbrot set. This is a highly computation-intensive operation, and as you can see from the benchmark results, it benefits enormously from the use of the FPU.

Four different benchmark tests were performed: The Sieve of Eratosthenes, a SetAPen/WritePixel system call test, the Mandelbrot set calculation using floating-point math routines, and the same Mandelbrot set calculation using the FPU. The results are given in the number of times faster the system is over a standard Amiga 2000, and are shown in the accompanying bar graphs. The Sieve of Eratosthenes is a straight integer-based computation, and is a good indication of the relative speed of the CPU where ROM routines are not involved. The SetAPen/WritePixel consists mostly of calls to two system routines, and shows the limitation of the accelerator board; most of its time is used by ROM calls and blitter operations, so the accelerator does little to speed it up. Still, with the ROM copied to 32-bit RAM and extra 32-bit RAM added to the system, even this test runs three times faster than on a stock machine. The Mandelbrot calculations show mostly the speed of floating-point calculations, but also involve SetAPen and WritePixel tests.

Each of the four tests was run under four different configurations of the *MMR* board: Basic configuration, SROM, DRAM, and SROM/DRAM. The 'Basic'

## Mega-Midget Racer MC68030/68881/882 accelerator board



Manufacturer: Computer System  
Associates (CSA), 7564 Trade St.,  
San Diego, CA 92121

Base price (20 MHz):	\$795
Price as tested:	
25 MHz Mega-Midget Racer	\$895
25 MHz 68882 co-processor	\$249
512k 70ns Static RAM	\$399*
Mega-Memory with 2 MB	\$499

Total	\$2042
-------	--------

(\*RAM prices have since been lowered)

configuration is just using the basic MMR board without ROM copied to high-speed 32-bit RAM and with no 32-bit RAM added to the system. This is the least expensive alternative, but as you can see from the benchmarks, it doesn't increase performance nearly as much as the other configurations. The 'SROM' configuration uses the MMR's special feature to copy ROM to the high-speed 32-bit on-board SRAM and map the ROM address to the new location. As you can see, this speeds up ROM calls (as in the SetAPen/WritePixel test), but does little for basic computation like the Sieve. The 'DRAM' configuration adds the 32-bit DRAM on the expansion daughterboard to the system memory list, so that the test program is executing from the 32-bit RAM. This has a pronounced affect on almost all computations. The 'SROM/DRAM' configuration combines both features, and is obviously the preferred mode of running the MMR. It involves both internal SRAM and external DRAM expansion, however, which adds quite a bit to the base cost of the board. There is one other configuration not listed in the benchmarks, which is slightly faster than even SROM/DRAM. Unless you have the new Kickstart 2.0 ROMs, only 256k of ROM is copied into the internal SRAM, leaving the other 256k free to be added to the system as 32-bit RAM. This RAM is faster than the 32-bit DRAM on the daughterboard expansion, requiring fewer wait states and letting programs run even faster. The difference is slight, but worth noting.

The second bar chart shows the results of the Mandelbrot tests using the FPU, and shows the incredible performance increases that are possible with the coprocessor. Remember, though, that unless the software you use supports the FPU, it won't have any benefit. You might want to hold off on the purchase of a 68881 or 68882 chip unless you know you need one. Floating point calculations are not all that common in many kinds of software, so don't think of the FPU as a magic device that makes everything forty times faster - unfortunately, it just doesn't work that way.

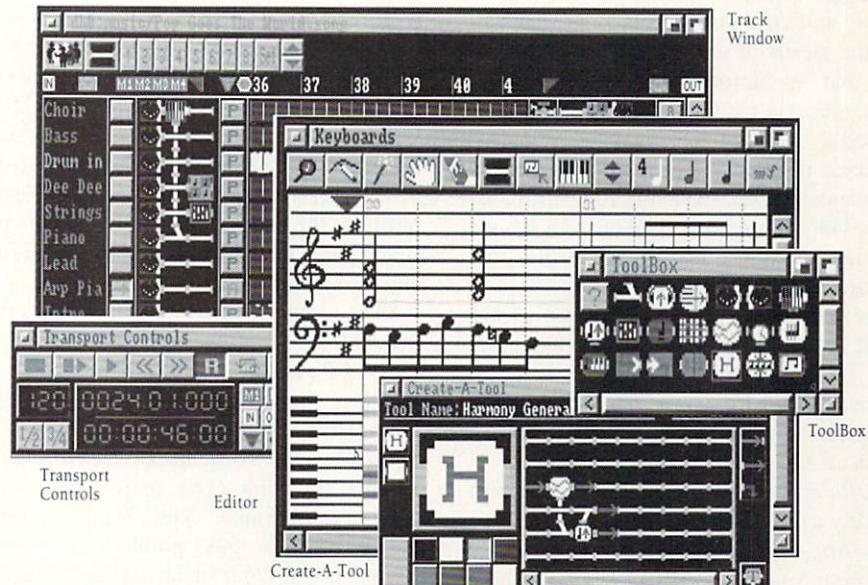
### Conclusions

The *Mega-Midget Racer* delivers on its promise of big performance at a relatively

small price, but the basic advertised price of \$795 doesn't begin to get you all the goodies that you may want for the most significant performance improvements. As you can see from the \$2042 price tag of our fully-equipped test unit, full-scale 68030 expansion doesn't come cheap (although RAM prices have been since lowered). Fortunately, you can start with

the basic system and expand as your needs (and bank balance) increase.

So, while the list of options and features of this device may seem as confusing as its name, the bottom line isn't: maximum bang for the buck. And you can't get any more basic than that.



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## GETTING MORE FROM DELUXE PAINT III

by Derek Grime

**C**omputer magazines devote a lot of column inches to 'best of' lists. You've seen the many reviews that reel off specs, facts, and figures trying to convince you of the merits of this hard drive controller or that wordprocessor. Fortunately for you, this isn't going to be one of those articles.

Once in a great while a product exists that stands so far above the competition its position is unrivalled. If there can be one Amiga 'best of' that is inarguable, that would have to be Electronic Arts' *Deluxe Paint III*. No program on the Amiga has sold better. No program has been used in the creation of more multimedia productions. *Deluxe Paint* was the program that showed the world just what could be done with an Amiga.

*DPaint* may in fact be one of the most widely used tools in the computer graphics industry. Like any tool, you can improve its performance with a little preplanning and know-how. Let's look at some useful ways you can make *DPaint* work even harder for you.

### In the beginning...

*Deluxe Paint III* starts up with a configuration screen that lets you choose the screen resolution and the number of colors you want to use. Unfortunately, the start-up screen doesn't cover all the options. If you are running *DPaint* from the Workbench and would like to get to any resolution with any degree of overscan and any number of colors, there is an easy way to get there in one step. Run *Deluxe Paint* and use the 'Screen Format' menu item to change between the common resolution modes that you use. At each resolution, save a blank (all background) picture. Make sure to give the pictures names that will mean something to you later on. For example, a low resolution overscan picture with 32 colors could be called 'loOVER32'. As you can see in Figure 1, we have several of these blank pictures

filed in our *DPaint* directory. Once you have saved yourself a selection of blank pictures, *Deluxe Paint* can be started by simply double-clicking on the icon that represents the resolution you want. Don't worry about filling up your disk with these blanks - most of the files are less than 1k in size. If this method doesn't work for you the first time you try it, select the file's icon and select the 'info' menu item in the Workbench. The 'default tool' area must list the correct path for the Amiga to find *Deluxe Paint*. If it does not, change it and then save the new data.

Even more start-up flexibility is available. One of the few irritating features of *Deluxe Paint* is the default palette. While it contains a useful range of gray tones, many of the other choices are not very practical. In addition, the software handles six color cycle regions but only two are activated. The blank picture method solves this problem as well. Before saving your blank screens, change the palette to one that you are comfortable with. Create your own or look at programs like *Videoscape 3D* that use a better default palette. A single palette, of course, is not going to suit every occasion. What we do is to save a series of blank brushes. These files are very small and contain all the palette and cycle information when

you load them into the program. To use a brush's palette, select the 'Picture/ Change Color/ Use Brush Palette' menu sub-item. We keep dozens of these palette files within close reach. Names such as 'nature', 'sand', 'metal' and 'wood' give us a good idea of the colors involved.

### Wizards of dithering

You can also get more mileage out of the color palette. Back in the prehistoric days of CGA and EGA graphics modes, programmers looked long and hard for a way to squeeze better quality from such a limited display. What they came up with was dithering. Let us now borrow a page from our cousins with Macintoshes and IBMs. Don't feel guilty; they've taken more than their fair share of ideas from the Amiga. Dithering is the technique of mixing two colors together to come up with a third. In the real world of pigments and ink, all colors are created by mixing together just a few primary hues. In computer graphics we can do almost the same thing with pixels. Imagine a white box on a piece of paper. If you wanted a gray tone but you only had black ink to work with, you could draw a fine dot pattern. If you squinted, the pattern would appear to be a shade of gray. The denser the dots, the deeper the gray. In the printing field this is known as a 'halftone.' Grab a newspaper and take a close look at the photographs. They are all printed as halftones of black ink on white paper. Remember that a newspaper photo is printed at a very low resolution, usually 60-80 lines per inch. This is about the same as your Amiga monitor in high resolution. If the newspa-

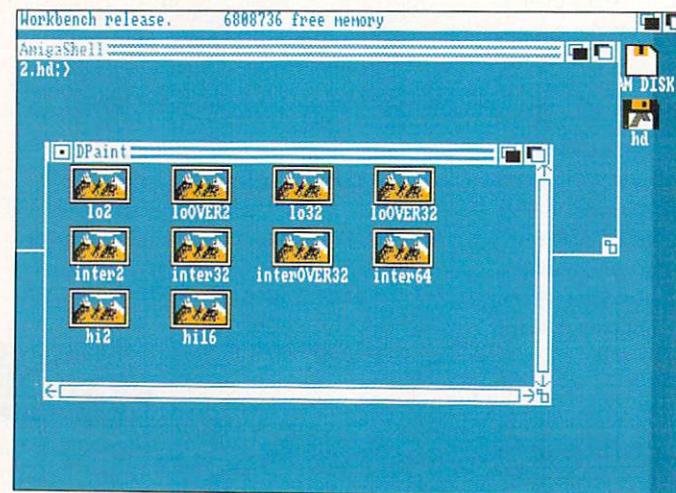


Figure 1.  
Saving blank  
pictures makes it  
easy to run  
*DPaint* in any  
mode without  
setup.

pers of the world can get away with halftones, so can we. Our advantage is that we have color on our side. Every color can be interpolated with every other. A simple calculation shows that on a high resolution sixteen-color Amiga screen, we could produce 256 colors by dithering. We have attained fake VGA!

Keep in mind that the initial set-up process is very time consuming. Prepare a number of small boxes of solid color on your screen. Then draw a diagonal line that is only two pixels long in a second color in each box. Pick up the diagonal line as a two-by-two square brush. Select the fill options and click on 'from brush' and then 'pattern'. You have now created a third color that can be used as a fill pattern. Once you prepare a series of squares in this fashion, they can be kept on file and used over and over again as base pictures. Changing the palette will appear to give you a whole new range of colors. Take a look at Figure 2. This is a low-resolution *Deluxe Paint* screen. The bar on the left uses six colors (including the background). The bar on the right has six dithered colors that give us an additional five shades of blue. The magnified circle in the center shows a close-up of what is really happening. Our dither method doesn't produce pure colors, but is an optical trick that fools you into seeing tones that aren't really there. (The same thing is happening on a smaller scale with the glowing phosphor dots on a computer's color monitor screen.) This being the case, dithering works best in the high resolution mode. In low-res, the 'trick' is more evident.

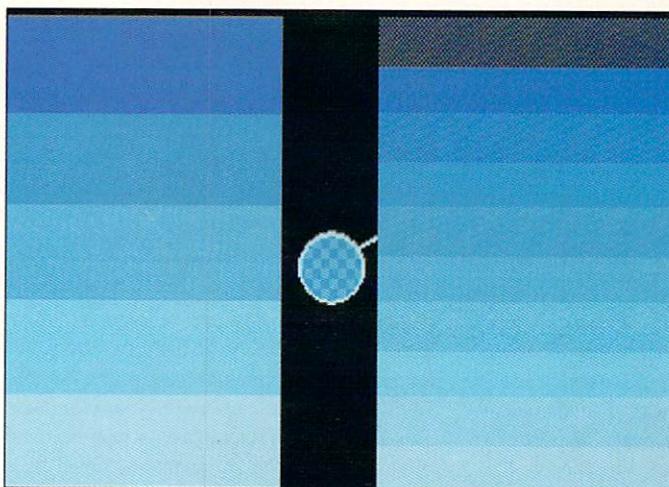


Figure 2.  
Using dithering  
to generate  
additional colors.

### Instant textures

In many graphics you'll want to have something interesting happening in the background. The trick is to spend as little time as possible generating the background so you can concentrate on the foreground objects. There are many techniques that can be used to create instant textures. Here's a method you can use to draw a complex background in one brush stroke: The first step is to use the palette requester to build yourself a spread of colors that complement your foreground drawing. Make this range of colors into a cycle using one of the six cycle ranges available. Return to the drawing area and select a one-pixel brush. Make sure the current color is in your range. Select the line drawing tool and then press function key F7 to put you in cycle draw mode. On the left side of your screen, draw a vertical line that extends from the very top to the

very bottom. Select the brush tool and pick up this line as a brush.

Before we go to the next step, select the 'MultiCycle' mode from the 'Prefs' menu. MultiCycle is used to cycle draw using several ranges at once, but it gives interesting effects when used with even a single range. To see the results, use your vertical line brush to draw a horizontal line from left to right that fills the entire screen. After a few seconds the background is filled with hundreds of multicolored squares. For an even wilder look, turn on color cycling with the TAB key. Instant psychedelia! Try other multicolored brushes with MultiCycle on. Figure 3 shows a straight line and an unfilled circle dragged out with both the Cycle and MultiCycle options turned on.

*Deluxe Paint III* makes possible a nearly seamless interface between the artist and the computer. There are hundreds of yet-undocumented ways of squeezing even higher performance from *DPaint*. If you have any techniques that you use in your own work and would like to share, please write me at the address below and I'll try to include them in future articles.

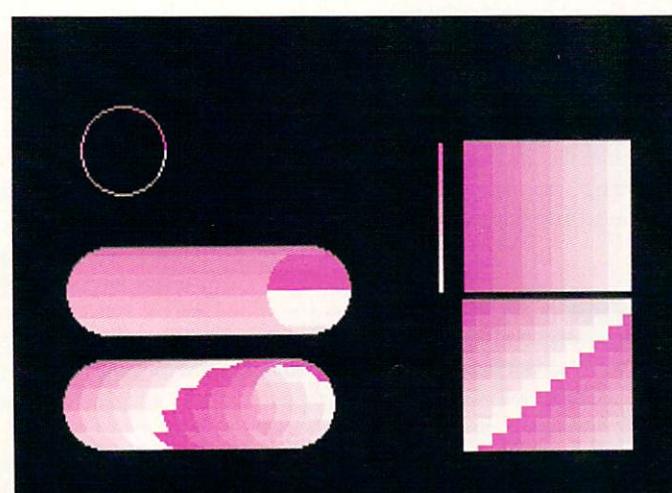


Figure 3.  
Using Cycle and  
MultiCycle modes  
to create  
backgrounds.

Derek Grime is president of Beyond Graphics, a Toronto-based studio that uses the Amiga to produce animation and visuals for television productions. Derek can be contacted at: Beyond Graphics, PO Box 1249, Station F, Toronto Ontario Canada M4Y 2V8.

# SEVEN AMIGADOS COMMANDS YOU SHOULD KNOW EVEN IF YOU LOVE WORKBENCH

by David W. Martin

**W**ith powerful graphical user interfaces such as the new Workbench 2.0, users are losing touch with a fundamental line of communication between themselves and their computer. Since Workbench has given people a way to avoid the AmigaDOS CLI, more and more people are finding themselves unable to communicate with the computer at its most basic level.

The menu options in Workbench allow you to perform simple AmigaDOS commands such as copying, renaming, deleting, or viewing files. Disk formatting and relabeling, and creation and deletion of files might also be available without having to learn AmigaDOS's mysterious commands.

Although such program features make your computing life easier, they don't cover every need. Someday you may need additional AmigaDOS commands to get the required job done, and these commands may only be available via the AmigaDOS CLI.

## What is AmigaDOS?

AmigaDOS is the Amiga's Disk Operating System. Although AmigaDOS does more than just manage disks, one of its main functions is to manage the files and data stored on disk. While AmigaDOS cannot always offer the most powerful solution to a problem, it interacts and works with other parts of the operating system, and with every program that you use. AmigaDOS commands let you use some of the capabilities of AmigaDOS directly, without going through application programs or the Workbench. These commands are provided on the Workbench disk, and are accessed from a CLI or 'Shell' window. By being aware of how these AmigaDOS commands work, you'll be able to use your computer and programs more effectively.

While AmigaDOS manuals appear cryptic and a little scary, learning the basics of AmigaDOS is relatively easy. In fact, knowledge of the seven commands listed below will help you out in most situations. Brief explanations

of these commands and comments about some of their more useful features follow. For a complete descriptions, refer to the AmigaDOS manual that came with your computer. To see a 'command template,' which is a kind of summary of the arguments accepted by a command, just type the command name at a CLI window followed by a question mark.

## Dir

You may already know that you can get a directory listing with the Dir command, but many people forget its more powerful features. For example, the command 'dir opt a' lists all files, subdirectories and subdirectory contents as a continuous listing. The more powerful 'dir opt i' causes an interactive directory mode that allows you to type files to the screen, delete files, and move through subdirectories. 'Wildcard' characters can be used with the directory command to make the directory command selective as to what it lists on the screen. For example, the command 'dir z#? opt a' lists all files and directories on the disk beginning with the letter Z. Figuring out all of the 'Dir' options would almost make an article in itself.

## Copy

This command, normally used to copy a file from one disk or directory to another, has some lesser-known capabilities as well. It can be used to send files to printers or other devices, for example. This can be particularly helpful if you want to use a printer at another location: Simply have your application program print the file to disk. Now take the disk containing that file to the system with the printer and give the command 'copy filename prt:'.

## DiskCopy

This command makes exact duplicates of a disk, and is most often used to make backup copies of new software that you have purchased. It cannot be used with copy-protected programs; for that you need an enhanced disk copier that is only available through third

party vendors. Some powerful features of DiskCopy that are often overlooked are: copying using a single drive only via 'diskcopy df0: to df0:', and making multiple copies of the same disk using the 'multi' option. When copying using a single drive, the system will prompt you for the source and destination disks.

## Format

Format prepares a new disk so that it can be used by AmigaDOS. Preparing a disk for storage involves setting up structures on the disk that allow AmigaDOS to manage files and directories. This lets AmigaDOS know exactly where to store files and how it can retrieve them later. The Format command is the equivalent of Initialize in Workbench. The Format command is a vital one, but can also be hazardous: formatting a disk removes any data that may have been previously stored on it. You should always double-check that the correct disk is in the drive before you begin formatting. One option that is often overlooked is the 'quick' option to quickly reformat a disk that has been formatted previously. You can also leave the Trashcan off of a new disk by using the 'noicons' option.

## Delete

This essential command removes unwanted files and directories from a disk, freeing the space they occupy. Normally deletion is considered permanent, but utility programs exist which can often 'undelete' deleted files or directories. An undelete program only works if the space that was previously occupied by the deleted file or directory has not been used by another file.

## Type

Type allows you to view the contents of a file on the screen. Using 'type text.txt' will display the contents of the file called 'text.txt' to your screen. If the file is long, the text can scroll by rather quickly, making it hard to read. Simply hit any key to pause the display, and then BACKSPACE to continue displaying the file. You can abort using CTRL-C. You can also pause by holding down the right mousebutton. You'll find many uses for the Type command, but some of the more important ones include examining files before deleting them or examining script files before executing them. Examination of files is not limited to text files, since Type will accept any file name it's given. Non-text files can be viewed as hexadecimal digits by using the

'opt h' option with the Type command. If you try to view a non-text (binary) file without using 'opt h', you'll get lots of garbage on your screen, but no harm will be done.

### Rename

As its name suggests, this command can be used to change the name of a file or directory. What many people don't realize, however, is that *Rename* is the best way to move a file or directory from one directory to another on the same device. If you have a directory (which might contain hundreds of files) that you wish to move from the root of your hard drive into a subdirectory, there's no need to copy the entire directory and then delete the original one; just rename the directory to its new location. For example, 'rename dh0:Letters dh0:TextFiles/Letters' would move the 'Letters' directory into the 'TextFiles' directory instantly. This technique only works within a single device or partition; you can't move a file or directory from one device or partition to another using *rename*.

This has been a quick overview of some of the most useful AmigaDOS commands. *info Technical Support* will delve more deeply into these and other AmigaDOS commands in the future. In the meantime, study the manuals included with your Amiga for

even more insights. *info* also heartily recommends the compact, handy *AmigaDOS Quick Reference* guide from Abacus. There are several other useful AmigaDOS books on the market as well.



### AMIGADOS COMMAND TEMPLATES

/A indicates the argument is *required*  
 /K indicates the option takes a *text argument*  
 /S indicates the option is an *ON/OFF switch*  
 [] indicates an optional command  
 , indicates a *SPACE*, not a comma!

```
dir DIR,OPT/K,ALL/S,DIRS/S,FILES/S,INTER/S
copy FROM,TO/A,ALL/S,QUIET/S,BUF=BUFFER/K,CLOSE/S,DATES/S,NOPRO/S,COM/S
diskcopy [FROM] <disk> TO <disk> [NAME <name>]
format DRIVE <disk> NAME <name> [NOICONS][QUICK][FFS][NOFFS][INHIBIT]
delete ,,,,ALL/S,Q=QUIET/S
type FROM/A,TO/S,TO,OPT/K,HEX/S,NUMBER/S
rename FROM/A,TO=AS/A
```



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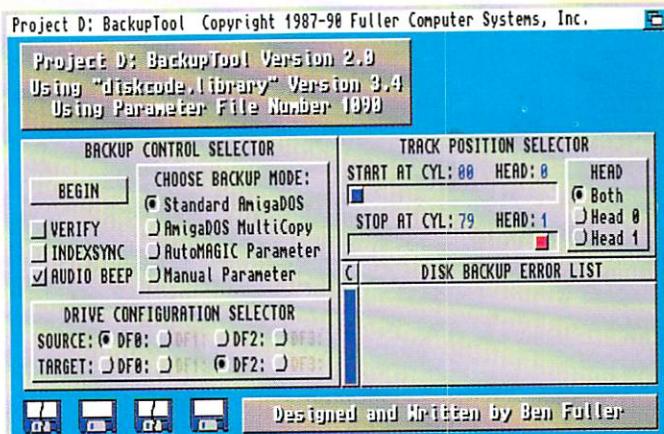
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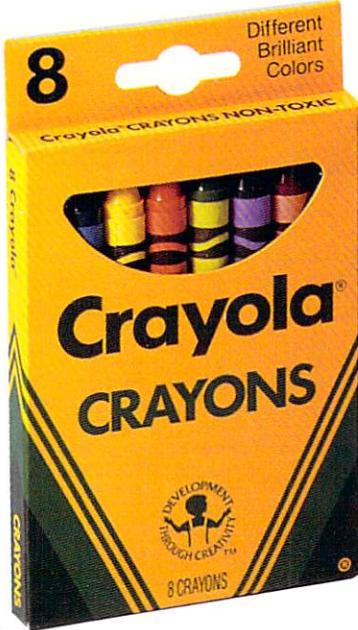
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## Get the picture?

Which one of the artistic tools pictured here would a child choose? The answer is obvious, the more colors the better. The choice is just as easy when it comes to Amiga paint programs. Digi-Paint 3 works in the Amiga's powerful Hold-And-Modify (HAM) mode which allows you to paint using all 4096 colors simultaneously. By comparison, Deluxe Paint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 32 colors\*. What does this mean to your Amiga art? Simply put, the program with more colors makes the better pictures. But that's just one of the reasons Digi-Paint 3 is the ultimate paint program.

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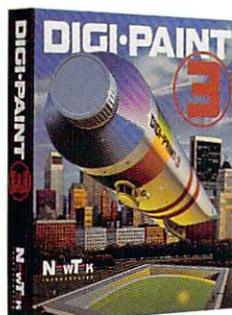
- 14 drawing modes including colorizing, range painting, and texture mapping
- Powerful tools including: magnify, rotate, cut-and-paste, and variable transparency

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